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Maine State Rail Plan, 2014

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2014 MAINE STATE RAIL PLAN



Maine Department of Transportation | July 2014

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CHAPTER 1 | *Framework of the Maine State Rail Plan*

MaineDOT recognizes that freight and passenger rail service is an important element of the state's transportation network. Rail links Maine to the national and international economies, provides safe and efficient movement of people and goods, while minimizing transportation related fuel consumption and air pollutions impacts. MaineDOT's Long Range Transportation Plan, has identified rail issues and serves as a framework for the rail plan. This state rail plan is a multi-year guide for focusing federal, state and local investments on a rail system that supports the vision, goals, and objectives of this plan.

It is important to understand that what distinguishes rail planning from other modes of statewide transportation planning is that freight rail is primarily privately owned, operated, and maintained. This impacts the passenger rail system because most of the intercity and commuter rail network in the United States operates over the privately owned freight rail system. Virtually all passenger railroads (and other transport modes such as automobile, bus, ferry, aviation, etc.) in the U.S. provide transportation services to the general public, but the revenue earned from fares collected is rarely sufficient to cover the full cost of capital, operations and maintenance. Passenger rail services are generally subsidized by states, localities and indirectly by federal government funding programs.

Freight rail service, operations and infrastructure investment are directly related to market forces and the business cycle and typically are not influenced by governmental policy. Private railroads must be able to make a profit in order to sustain the services they provide and remain viable and active business enterprises. While government may establish policy and funding priorities such actions must be tempered with the reality that planning for rail is unlike other modes of transportation that rely on publicly owned and maintained infrastructure.

1.1 Purpose of the State Rail Plan

Statewide transportation planning is required by federal law under guidelines established originally by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and more recently by the Passenger Rail Investment and Improvement Act of 2008 and the Rail Safety Improvement Act of 2008. Code of Federal Regulations Title 49, Part 266 outline the basic requirements of a state rail plan, and PRIIA 2008 sections 303, 307 and 501 provide further guidance. The Act requires that rail capital projects must be identified in a state rail plan to be eligible for federal financial assistance. We feel this plan is compliant with Federal Regulations.

General guidance for state rail plans from federal legislation includes:

- Increasing the safety and security of the transportation system;
- Increasing mobility of people and freight;
- Protecting and enhancing the environment, promoting energy conservation, improving the quality of life, and promoting consistency between transportation improvements and State and local planned growth and economic development patterns;
- Enhancing the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight;
- Promoting efficient system management and operation; and
- Emphasizing the preservation of the existing transportation system¹.

¹ Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, Section, Section 6001, "Statewide Transportation Planning."

State rail plans are to be coordinated with other state transportation planning programs and clarify long-term service and investment needs. Maine's state rail goals and objectives are included in the long range transportation plan, which influenced the development of this state rail plan.

This Maine State Rail Plan (MSRP) is designed to be compliant with both federal and state legislation.

The Rail Safety Improvement Act of 2008 (RSIA) provides opportunities for federal funding of infrastructure improvements to provide for new high speed and intercity passenger rail operations. The Passenger Rail Investment and Improvement Act of 2008 (PRIIA) Section 307(b)(j) directs the administrator of the FRA to provide assistance to states in developing their state rail plans in order to assure that the Federal long range rail plan is consistent with approved state rail plans. PRIIA has given the FRA additional funding responsibilities that include administration and management of the federal funds invested in high speed rail. State rail plan preparation is essential to secure federal funding for passenger rail capital improvements.

The PRIIA state rail plan requirement tasks states with addressing a broad spectrum of issues, including an inventory of the existing rail transportation system, rail services and facilities within the state. States must also identify and describe the State Rail Plan Transportation Authority and State Rail Plan Approval Authority. The former prepares, maintains and administers the plan; the later reviews and approves the plan.

MaineDOT has advanced rail freight enhancement projects and taken significant steps to expand freight transportation planning activities, beginning with the completion of the Integrated Freight Plan in 1998. This plan described the freight system in Maine, its' utilization, key issues and potential improvement strategies. The 1998 study was updated and refined in 2002, and a further update was completed in 2009.

One important aspect of the MSRP is to establish a base line review and analysis of the Maine railway system² and to identify and evaluate feasible strategies to facilitate the movement of people and goods to, through and from the state. The plan supports the recognition that the Maine railway system is a vital component of the economic competitiveness of Maine's multi-modal transportation network, business development and tourism needs, and will require additional capital investment to improve the level of service required to meet future demands. Decreasing volumes of rail traffic threaten the viability of the system, and reduce mobility options for the movement of goods with a resulting negative economic impact. Reduced rail volumes increase reliance on trucking and the associated impacts on roadway congestion and maintenance, higher levels of fuel consumption and associated environmental impacts to air quality and greenhouse gas emissions (GHG). The MSRP establishes a framework on which to build public-private partnerships that advance both public initiatives and provide a benefit to both the public at large, railroad users (shippers and passengers) and railroad operators.

The MSRP includes:

- Designation of the MaineDOT as the State Rail Plan Transportation Authority, and the MaineDOT Commissioner as the State Rail Plan Approval Authority.
- Inventory and analysis of freight and passenger marine, aviation, rail, and transit terminals, multimodal facilities, and gateways; - taking into account the interaction between these transportation modes.

² The Maine railway system includes privately owned and operated railroads and state owned rail lines that are either in operation or rail banked (or converted to recreational trail use) and the supporting system of rail yards, intermodal facilities, ports and warehouses/distribution centers that provide for connectivity to other modes and end users (shippers/consignees). The railway system also includes the shared assets that accommodate intercity passenger rail operations, and have potential to provide routes to implement commuter rail services.

- Identification of the major ongoing and proposed freight and passenger rail initiatives and state and local rail transportation policies and regulatory considerations.
- Identification of economic, environmental, land use and community impacts of rail services and operations.
- Assessment of the rail system's ability to meet current and future needs for goods movement and personal mobility.
- Critical rail corridor criteria development and screening and further enhancement of project specific investment criteria.
- Identification of current and future policy and investment strategies for state and local governments, and private industry.

The 2013 MSRP will be amended as appropriate in conjunction with the state's ongoing statewide transportation planning activities and will be formally updated and revised within five years of this issuance.

1.2 Visions, Goals, Objectives of the Maine State Rail Plan

The long-term vision for Maine's rail network is to enable owners, operators and MaineDOT to achieve a state of good repair for the overall network that provides appropriate levels of service for the safe, efficient and timely movement of people and goods to, from and within the State of Maine.

MaineDOT's vision for the state transportation system is a balanced, multi-modal system that will provide choices for residents, business, and visitors, providing effective connections throughout Maine and to national and international markets. A continuing collaborative planning process should be undertaken to preserve and enhance rail infrastructure and service as an integral element of the overall system, thereby enabling Maine to be competitive in an ever-evolving national and global marketplace.

The freight rail vision is to achieve and maintain a system that is fully integrated to the North American rail freight system, and enables Maine business to reach current and future markets and sources with timely and reliable services. Railroads in Maine will continue to play a vital role in the meeting the needs of the business community to maintain and expand its access to national and international markets.

The passenger rail vision is to achieve development of a system that is fully integrated with the North American passenger rail system through the provision of safe, fast, and reliable intercity and commuter rail passenger services. These services will be connected to local and regional transit which will enable Mainers and visitors alike to reach their destinations without reliance on the automobile.

Goals and Objectives for Rail Service in Maine

The goals and objectives for freight and passenger rail in Maine are presented in this section. The broad based goals are followed by a series of more specific objectives. These goals and objectives were developed in concert with and based upon statewide planning efforts such as MaineDOT's Long Range Plan and Metropolitan Planning Organizations' Long Range Transportation Plans.

Goal 1:

Ensure personal safety and property and infrastructure security through enhancements where necessary.

Objectives:

- Implement passenger and freight positive train control for train travel, as required by the FRA, to reduce the risk of accidents.
- Reduce illegal trespassing and enhance security on rail rights-of-way.
- Maintain and improve the security of passengers consistent with state and federal requirements.
- Invest in rail/highway crossing improvements, consolidations and closures where appropriate.

Goal 2:

Improve mobility and accessibility of goods and people through greater rail system integration and interconnectivity of various transportation modes.

Objectives:

- A rail network in Maine that is fully integrated with the North American rail system, including compatibility with current standards for rail car size and weight.
- Increase intermodal freight traffic through improved highway-rail and water-rail intermodal connectivity.
- Increase passenger mobility options and access to intercity rail service via other transit modes through the proximity of new stations and/or system expansions.
- Improve local and national coordination among freight and intercity passenger systems with other modes of transportation among the railroads, Federal Government, Canada and other states in the New England region.
- Explore potential for incremental passenger rail improvements such as new stations, passing sidings, new and/or expanded services.
- Study potential passenger rail service through Lewiston-Auburn connecting Maine to Montréal, Canada.

Goal 3:

Preserve and strengthen the existing rail system to efficiently serve the long-term needs of current and future customers.

Objectives:

- Preserve rail rights-of-way for future rail use or to use as part of the overall transportation network
- Encourage increased use of rail service by promoting rail service opportunities, providing facilities for businesses to access rail service, and assisting localities and rail users in understanding railroad economics, revenue needs of individual lines, and land use requirements.
- Where necessary, seek alternative ownership and/or operation of rail facilities in order to preserve service.
- Utilize federal or state funds for rail service continuation assistance where appropriate. Preference should be given to those analyzed lines that have a positive benefit over cost ratio and will not require public assistance for ongoing operations.
- Encourage state of good repair investment to maintain rail infrastructure and right-of-way for current and future use.

Goal 4:

Enhance the freight and passenger rail system efficiency for Maine's businesses and residents.

Objectives:

- Improve system capacity to meet current and future passenger and freight demand, with a particular focus on critical and shared-use (freight/passenger) corridors.
- Improve on-time-performance and reliability to encourage growth of freight and passenger market share.
- Reduce barriers to growth of rail market share by eliminating bottlenecks caused by weight and height constraints.
- Enhance reliability and interchange among freight rail carriers.
- Increase freight rail market share of heavy haul commodities and product diversity to reduce impacts on public infrastructure and budgets.
- Increase passenger rail ridership.
- Provide system redundancy, reliability and viability to support other modes of transportation.

Goal 5:

Ensure the continued availability of a rail system to improve the quality of life for Mainers and enhance the energy efficiency, environmental sustainability necessary to support the states' economic competitiveness.

Objectives:

- Encourage modal diversity through the greater use of passenger and freight rail to reduce growth of roadway congestion, energy use and greenhouse gas emissions.
- Invest in new rail infrastructure and technology such as newer locomotives and auxiliary power units (APU's) to reduce idling, energy usage and to enhance air quality.
- Invest in freight rail and intermodal facilities to serve shippers currently without direct rail connections.
- Coordination among state agencies, including the Department of Economic and Community Development and Department of Environmental Protection, and private entities to implement rail alternatives that encourage economic development, especially in those areas that are facing economic hardship.
- Link rail transportation and land use planning to regional and statewide development practices.
- Further enhance the quality of service and market served by the Downeaster intercity passenger rail service to provide alternatives to medium and long distance highway and air travel.

Goal 6:

Identify sources of adequate, stable and predictable funding, through public and private ventures that will support the development and operation of a rail transportation system.

Objectives:

- Establish predictable, balanced and sufficient funding sources for continued operations, maintenance and potential expansion of the rail system.
- Prepare for potential federal freight and passenger rail funding opportunities.
- Continue public-private partnerships that enable continuing and significant investments in rail.
- Prepare strategic investment program based on critical trade corridors, critical commuter corridors and land use strategies to reduce sprawl.
- Ensure that Maine's investment in rail is a good return for money expended in that it improves air quality, reduces congestion and enhances economic development activities.

Policies:

MaineDOT has established rail policies. These include:

- Active support of public-private partnerships such as IRAP, FRIP and railroad corridor preservation.
- Capital investments into infrastructure rehabilitation and preservation of railroad rights-of-way.
- Capital investments for freight rail projects that have public benefits and provide for return on investment.

1.3 Transportation and Rail Planning in Maine

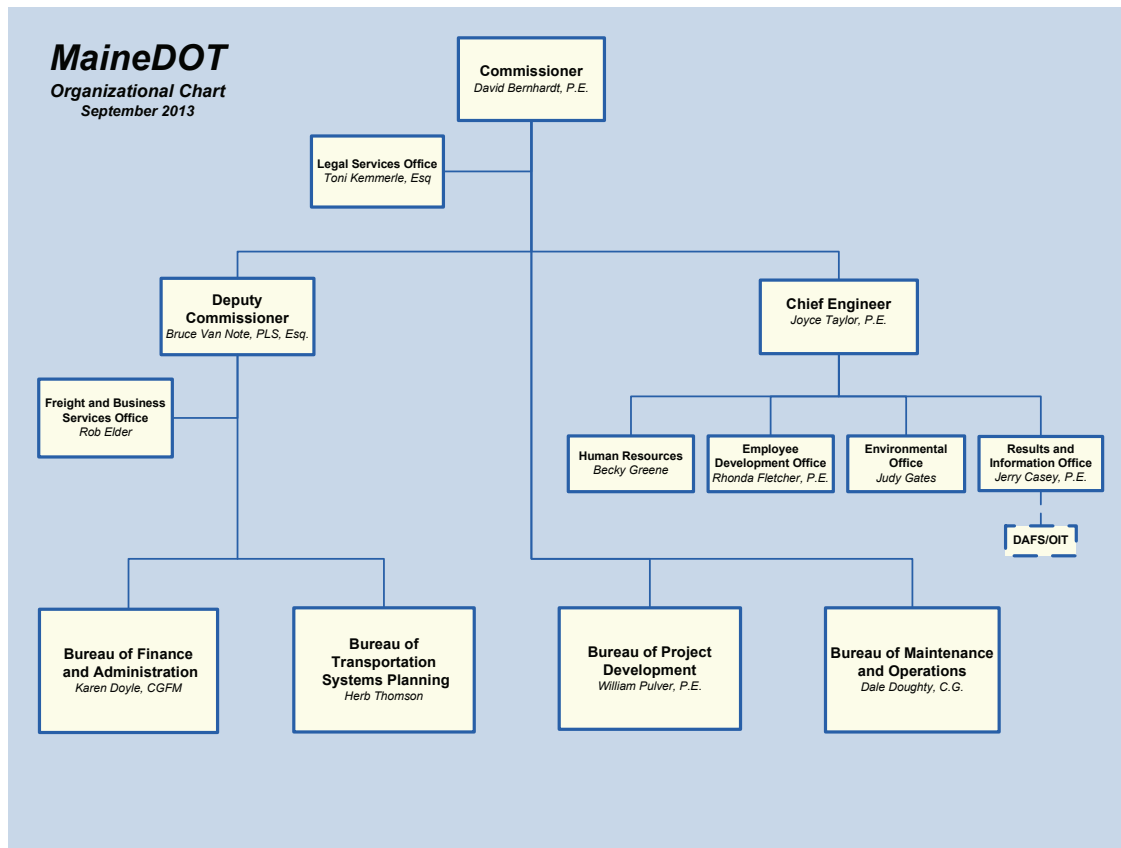
There are several public agencies in Maine engaged in statewide and regional freight and passenger rail planning activities. MaineDOT's Bureau of Planning is most directly involved with rail planning in the state. Metropolitan Planning Organizations and Regional Planning Organizations are actively involved in land use and transportation planning activities. Local municipalities provide the most basic and often important level of government and contribute to rail planning.

1.3.1 MaineDOT

An act of the Legislature created the Maine Department of Transportation in 1972. Today, MaineDOT has responsibility across all modes of transportation including highways and bridges; airports and aeronautics; ports and marine activity, including the State Ferry Service; railroads; public transportation; and bicycle and pedestrian facilities. MaineDOT is charged with the overall responsibility for execution of the State's transportation policy and performs a wide range of multi-modal transportation planning that includes railroads as an integral element of the state's transportation network.

MaineDOT is a cabinet level agency that organized to provide a unified and comprehensive approach to development, maintenance and operation of the state's transportation system. An organization chart of the Department is illustrated in Figure 1-1. Key bureaus and offices engaged in railroad planning and development are illustrated in Figure 1-1.

Figure 1-1: MaineDOT Organizational Chart



1.3.2 Bureau of Planning (BP)

This Bureau is responsible for conducting systematic and comprehensive statewide transportation planning, capital improvement program development, research, and community services activities in support of the department's overall strategic goals and policies.

MaineDOT prepares several transportation plans that may impact future state investments in railroad projects. These include the Long-Range Multimodal Transportation Plan, and a Statewide Transportation Improvement Program (STIP). Consultation associated with each of these efforts provide non-metropolitan and metropolitan officials, residents and businesses opportunities for input ranging from MaineDOT's long-range goals to requesting specific regional and local transportation improvement projects.

- Long-range plan: The Long-Range Plan is a 20-25 year view and is a comprehensive and multimodal transportation plan that sets goals, objectives and strategies for MaineDOT. MaineDOT develops a draft long-range plan based upon identified transportation needs, anticipated funding and input from stakeholders including municipalities, other State agencies, MPO's and Regional Planning Organizations(RPO). MaineDOT makes the draft plan available for public review at least 45 days before public hearings to accept

comments and concerns about the plan. The plan is finalized after consideration of these comments and concerns.

- **Mid-range plan and BTIP:** The Mid-Range Plan looks ahead ten years and links the policy-based Long-Range Plan with the project-based BTIP. The Mid-Range Plan identifies major initiatives and prioritizes transportation needs that MaineDOT anticipates funding over the life of the plan. The BTIP is a comprehensive list of capital improvement projects for all modes that MaineDOT submits to the Legislature every 2 years in support of its budget request. As the first step in developing the Mid-Range Plan and/or BTIP, MaineDOT provides every municipality with a detailed project request package for all modes of transportation where each municipality is asked to identify both local and regional transportation improvement projects. Indian Tribes and county commissioners are also asked for transportation improvement project priorities. MaineDOT releases a draft Mid-Range Plan, makes it available for comment for at least 45 days and holds regional public meetings on the draft plan throughout the State.
- **STIP:** The STIP is a multi-year, multi-modal program of transportation projects consistent with all other transportation plans developed within the State. Once the draft STIP is prepared, notice of its availability is published in major newspapers. MaineDOT also makes copies available at all MaineDOT Regional Offices and depository libraries. MaineDOT accepts written comments on the STIP for at least 14 and up to 30 calendar days after the date of the notice. Once MaineDOT's statewide transportation improvement program (STIP) has received federal approval, the Bureau of Project Development designs and delivers the planned projects.

Office of Freight and Business Services

The Office of Freight and Business Services operates within the Office of the Deputy Commissioner and oversees departmental policy, programs and projects that promote a cohesive freight transport system by highway, rail, ships, pipelines and airplanes.

Bureau of Maintenance and Operations

The Bureau of Maintenance and Operations is responsible for maintenance of State and Non-Federal aid State roads in Maine. The bureau operates through five Regional Offices located in Presque Isle, Bangor, Augusta, Scarborough, and Dixfield. This Bureau also provides rail inspection and project oversight services to the Office of Freight and Business Services.

1.3.3 Northern New England Passenger Rail Authority (NNEPRA)

NNEPRA is a public transportation authority created in 1995 by the Maine State Legislature to develop and provide passenger rail service between Maine and Boston and points within Maine. NNEPRA manages the budget, contracts, promotion, and customer services associated with the Downeaster passenger rail service operated by Amtrak (National Passenger Railroad Corporation). NNEPRA has a 20-year agreement with Amtrak to operate the service between Portland and Boston and is party to agreements with host railroads Pan Am Railways and the Massachusetts Bay Transportation Authority. Additionally, NNEPRA manages the contract with Epicurean Feast to provide onboard food service and holds liability and insurance policies associated with the operation of the Downeaster.

The seven-member NNEPRA Board of Directors, appointed by the Governor of Maine, is supported by a professional staff. The Board sets policies and guidelines relating to capital projects to enhance service operating strategies, marketing programs, community relations, food service, and service planning activities for the Downeaster. NNEPRA works in concert with the MaineDOT.

NNEPRA's mission is to develop and manage a quality passenger rail system that meets the transportation needs of its customers, delivers value, and enhances economic development within the region.

NNEPRA's vision is to provide customers with a travel experience that consistently exceeds their expectations, delivers value, and contributes to a modern, integrated public transportation system.

1.3.4 Metropolitan Planning Organizations (MPOs)

MaineDOT's Administrative Guide to Metropolitan Planning Organizations underscores the important role that MPOs play in transportation planning in Maine. By federal regulation, MaineDOT must carry out a continuing, cooperative and intermodal transportation planning process that facilitates the efficient, economic movement of people and goods. In Maine, MPOs share responsibility with MaineDOT for making transportation investment decisions in urbanized areas.

MaineDOT coordinates and consults with four MPOs as it develops the plans and programs to carry out the state's strategies for maintaining and improving Maine's transportation system. MPOs carry out their transportation planning activities in cooperation with MaineDOT and are subject to the same planning policies, processes, and requirements as the Department. Maine's four MPOs are listed below and illustrated in Figure 1-2:

- Androscoggin Transportation Resource Center (ATRC), organized in 1975, includes the Lewiston-Auburn metropolitan area communities of: Auburn, Lewiston, Lisbon and Sabattus.
- Bangor Area Comprehensive Transportation System (BACTS), formed in 1982, serves the Bangor metropolitan area which includes: Bangor, Brewer, Veazie and portions of Hampden, Orono, Old Town, Milford, Bradley, Orrington and the Penobscot Indian Nation.
- Kittery Area Comprehensive Transportation System (KACTS), formed in 1982, includes the Maine portion of a metropolitan area primarily located in New Hampshire. The Maine communities include Kittery, Eliot, Berwick, South Berwick, and Lebanon.
- Portland Area Comprehensive Transportation System (PACTS), formed in 1975, serves the Portland metropolitan area consisting of: Portland, South Portland, Cape Elizabeth and Westbrook, along with portions of Freeport, Yarmouth, North Yarmouth, Cumberland, Falmouth, Windham, Gorham, Scarborough, Old Orchard Beach, Biddeford, Saco, Arundel, Raymond and Standish.

Figure 1-2: Maine's MPO Areas

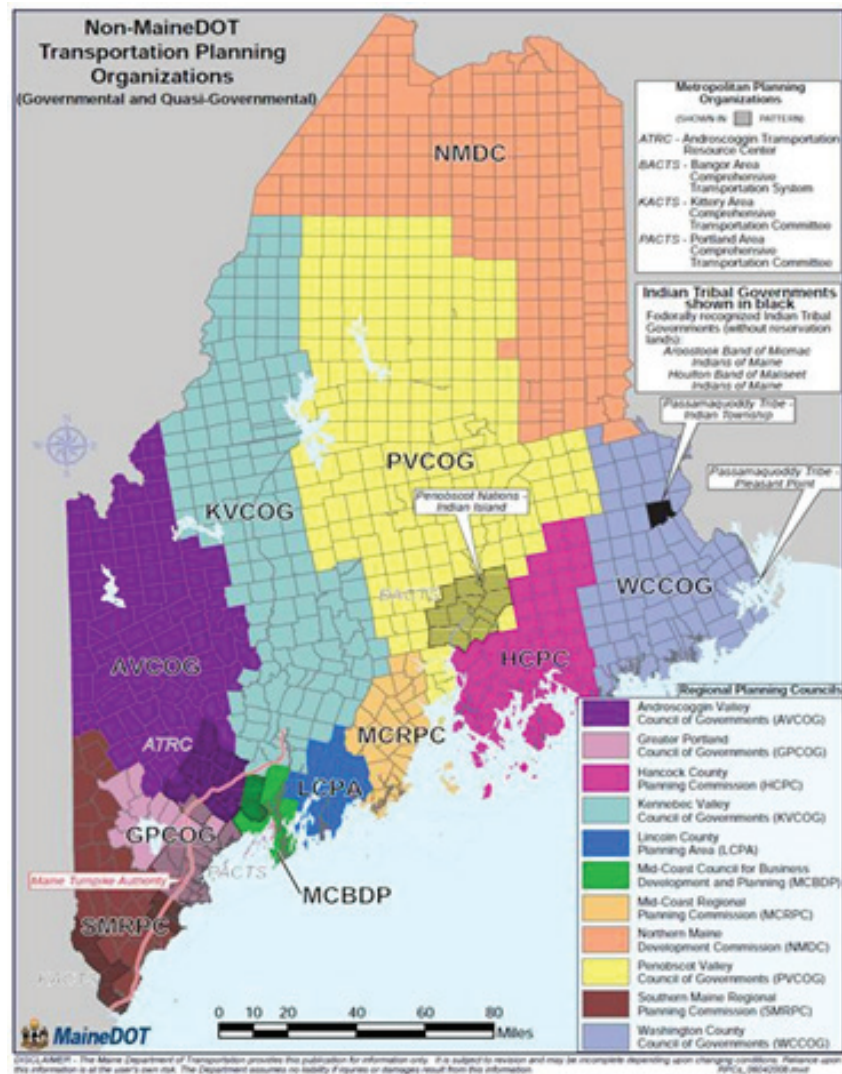


MaineDOT provides technical assistance to MPO staffs, helps with project scoping and cost estimation, and routinely develops the projects that the MPOs program. MaineDOT also works with MPOs as they develop their transportation improvement programs (TIPs) to ensure that the documents include MaineDOT projects in MPO areas.

1.3.5 Regional Organizations

The State's regional councils, which include the 10 regional planning councils and councils of government and one county planning office listed (illustrated in Figure 1-3 also play an important role in transportation and land use planning in non-metropolitan areas. MaineDOT relies on these agencies to coordinate information on transportation needs from stakeholders in their respective regions.

Figure 1-3: Regional Planning and Development Councils



These organizations play front-line roles in identifying needs within Corridors of Regional Economic Significance for Transportation (CREST) around the state, and in developing multi-modal management plans for the Corridors, which in turn serve as input to MaineDOT's Long-Range Plan and in the development of multi-modal corridor management plans. It is anticipated that most large-scale transportation projects of interest to communities will have been identified as part of multi-modal corridor management plans. Objectives of these planning efforts are to preserve the capacity of the corridors to move people and freight, preserve and enhance regional economic assets, align transportation investments with the needs of communities, and preserve quality of life.

The regional planning organizations assist municipalities in updating comprehensive plans and the transportation chapters of those plans and with ordinances and other actions to better align land use decisions with the transportation system. These agencies are MaineDOT's conduit for delivering transportation planning data to communities who are undertaking transportation chapters of comprehensive plans stand-alone transportation plans.

1.3.6 Sensible Transportation Policy Act

In 2003 and 2007, the Maine Legislature amended the law to require a better connection between transportation and land-use planning – specifically, between the STPA and Maine’s Growth Management Act³. MaineDOT, in collaboration with the State Planning Office (SPO), has drafted a rule to link the transportation planning processes of the Sensible Transportation Policy Act (STPA) with those of the Comprehensive Planning and Land Use Regulation Act. This approach is based on the belief that land use and transportation planning must work hand-in-hand to protect highway safety and mobility and also enhance economic opportunity, community livability, and environmental quality. The Law also directs MaineDOT to develop incentives for communities that adopt plans that reduce reliance on the state highway system.

MaineDOT, the Maine Turnpike Authority and the State Planning Office collaborated on the Transportation Chapter of both the STPA rule and the Growth Management Act; the goal being for the Transportation Chapters of these Rules to be the same.

MaineDOT also developed a Municipal Handbook to guide local planning efforts in meeting the STPA policy objectives. Municipalities or groups of municipalities that develop plans using the new STPA rule will be eligible for transportation planning assistance and other investment incentives including:

- Bonus prioritization points that increase access to funding in MaineDOT’s competitive programs - MaineDOT is to publish a list of these annually;
- Incremental reductions in any local match requirements; and
- Bonus prioritization points for MaineDOT funded highway reconstruction and transportation mobility projects.
- MaineDOT, in consultation with the State Planning Office, reserves the right to determine whether transportation chapters of land-use plans, policies or ordinances adopted by municipalities will meet the STPA policy objectives.
- Bonus prioritization points for MaineDOT funded highway reconstruction and transportation mobility projects.
- MaineDOT, in consultation with the State Planning Office, reserves the right to determine whether transportation chapters of land-use plans, policies or ordinances adopted by municipalities will meet the STPA policy objectives.

1.4 Public and Stakeholder Involvement

The Maine State Rail Plan was developed with public input from a wide range of interests. Public input was solicited specifically to help understand local, regional and statewide needs, and to subsequently develop an objective set of criteria to guide future public investments in the railroad system. In the past decade the public has shown a great deal of interest in the possibility of increasing alternative modes of travel, with especially strong interest in passenger rail. At the same time, the freight rail system is widely perceived as a critical support to the pulp and paper industry, which is vitally important to the economy of Maine. These items, coupled with the public’s acceptance of the need for carbon-reduction tactics and increased federal financial support for both freight and passenger rail transportation, guaranteed a lively interest in the development of the Maine State Rail Plan.

³ The Sensible Transportation Policy Act can be found at Title 23, MRSA, Section 73. The 2003 amendment required MaineDOT to adopt a rule in coordination with the State Planning Office that links transportation and land-use planning processes. The 2007 amendment provided for incentives to adopt local and regional community transportation plans that employ land-use strategies to reduce pressure on state transportation corridors. The Growth Management Act can be found at Title 30-A, MRSA, Chapter 187.

The MSRP public participation plan was based on current best practices and was developed early in the planning process. The public outreach component of the plan included face-to-face interviews, a broad-based technical advisory committee (TAC), a series of widely dispersed public meetings throughout the state, and, because Maine encompasses a large geographical area, a project website was developed to receive comments and as a means of sharing information.

The news media was an effective partner in the effort to engage the public as well as providing information on the challenges of funding rail projects in today's fiscally constrained environment. Appendix A includes a list of TAC members and Appendix L provides examples of the website contents and press releases.

The MSRP was coordinated with and incorporated planning documents and priorities of the four MPO's in the State as well as other plans of Regional Planning Organizations and Regional Economic Development Agencies in rural areas. This was done by asking these organizations for their comments and priorities for the plan as well as opportunities to review and make comments on the draft plan. These organizations were represented at all public meetings as well.

In addition to participating in the MSRP Technical Advisory Committee meetings all operating railroads within the State were given a questionnaire to fill in outlining what they saw as priorities within the State's plan and the railroads were given multiple drafts of the plan as it was being developed. Each railroad was represented at public meetings in their area to weigh in on topics that were brought up by the general public.

Maine shippers who use the rail system were sent surveys as well as part of the State's development of its Integrated Freight Plan (IFP). Over 300 surveys were sent to businesses and shippers throughout the state for input in the MSRP and IFP with a return rate of approximately 40% of these surveys. In addition several large rail shippers were interviewed face to face to get detailed information on their transportation needs and the systems weaknesses. This information was used in the development of both the MSRP and IFP and these plans were closely coordinated as they were developed. Maine's IFP was approved by USDOT in the fall of 2014. Maine is working with other States in the region on both passenger and freight rail issues that impact the region and that may impact the Maine's rail planning. This is done through individual contact with other states as well as participation in groups such as the I-95 Corridor Coalition, States for Passenger Rail Coalition and the New England Regional Freight Group as well as others.

1.4.1 Technical Advisory Committee

To provide expert guidance to MaineDOT and the Study Team, a Technical Advisory Committee (TAC) was formed to ensure technical accuracy and make sure all key factors were included in the planning process. To ensure a broad-based group, a solicitation letter asking for participation in two Technical Advisory Committee meetings went to 31 organizations around the state. The categories of organizations solicited included: railroad operators, transloaders, shippers, rail and truck advocacy organizations, planning and economic development organizations, ports, distribution centers, legislators, state and federal agencies, environmental/smart growth organizations and multi-modal advocacy organizations. All those solicited to join the TAC accepted the offer and the first meeting was convened in September 2009. The tools utilized as part of this effort included: PowerPoint presentations, map boards and group discussions.

The primary goal of the first TAC meeting was to provide the group with an overview of the planning process and objectives, and facilitate small-group discussion on the following series of questions:

1. Is the present condition of the rail system adequate to meet the current and future needs of Maine's industries – especially paper, forest products, and emerging markets related to energy development (bio-mass, wind)?

2. Maine has had several good programs to encourage freight rail – IRAP, and FRIP, for example – and has good experience with purchase and rehab projects. Are there other steps Maine should take to encourage freight rail business?
3. What do you see as the most pressing statewide and regional rail transportation issues right now and in the next five to ten years? What are priorities? What can stakeholders do to help create solutions?
4. What criteria do you suggest the state should use to prioritize investments in rail?
5. What forces are limiting the State and stakeholders in addressing and meeting regional and statewide rail needs? Are there any other trends you see moving forward that affect the State and its stakeholders in addressing and meeting regional and statewide rail needs?
6. What role can improved intercity and new commuter rail have on mobility?
7. What do you see as the priority passenger rail projects?

In December 2009, a second TAC meeting was provided to review state and national rail trends and key findings about the State's current rail system. Draft recommendations and expanded criteria were presented for comment by the TAC. Meeting notes from the two TAC meetings can be found in Appendix A.

1.4.2 Public Meetings

Public meetings were an important part of the communications strategy for the Maine State Rail Plan. Meetings were scheduled in two phases; the first set to take place in early Fall of 2009 and the second in December 2009. Based on input from the first TAC meeting, a set of draft criteria was introduced to the public to spur discussion. The first set of meetings provided the public with preliminary findings on rail in Maine; however, the primary focus was on hearing the thoughts and opinions of the public on two major questions:

“What are the biggest issues facing Maine’s rail system at this time?”

“What criteria should the State of Maine use in prioritizing future rail investments?”

Originally, public meetings were scheduled in just two locations, Portland and Bangor. However, interest in the proposed plan was high, and MaineDOT added additional meetings in Presque Isle and in Lewiston/Auburn. The TAC members were also highly supportive of the public meeting process and helped generate additional awareness of the meetings via their own outreach efforts. An extensive email list of interested parties was developed to share information and provide meeting notifications.

In December, a second round of meetings provided the public with a review of state and national rail trends and key findings for the State's rail system. A set of draft recommendations and expanded criteria were presented for comment.

Attendance levels at all meetings were high, averaging 60 attendees each over the eight meetings, with as many as 90 at some of the larger venues. This is well above average for a planning meeting in Maine.

1.4.3 Website

The Maine State Rail Plan website, which can be found at www.maine.gov/mdot/railplan/index.htm, was designed to present an overview of the plan's objectives as well as insight into the kind of information that would be gathered throughout the process. Its primary purpose, however, was to provide ongoing information in terms of upcoming meeting times and locations, detailed reports on past meetings and presentations, and to provide an opportunity for the public to post their comments online. A significant number (approximately 65+) of the

public posted their comments on-line. A hallmark of many comments was their length and substance, another indication of the public's strong interest and dedication to fostering rail service in Maine.

1.4.4 Media

Media coverage was actively solicited as part of the State Rail Plan's communications strategy by generating press releases two to three weeks prior to public meetings, and following up with media contacts.

1.4.5 Summary of Comments Received

Comments received during the meetings were evaluated and sorted based on general categories of comments, and on the commonality of concerns. These inputs informed the development of the draft State Rail Plan.

Enhance Economic Development

Many public comments recommended that investment decisions should be made based on the potential economic impact, and that investment should be followed up with state and private economic development support.

- Economic development potential should be key to investment decisions
- Economic development is needed to support building rail infrastructure
- A return on the public investment in rail lines should be measurable
- Public investment should require something back from beneficiaries

Provide Greater Focus

Public comments suggested that previous state investments in rail had been scattershot across the state and that this was not the most effective way to invest taxpayer dollars. They did not endorse decisions made for political reasons but stated that investment decisions should be made based on a coherent plan.

- Leverage rail infrastructure that is already in place
- Focus investment in critical locations – do not scatter it everywhere
- Make sure to assess benefit/cost/potential of rail corridors before investing
- Identify central rail facilities and ship the rest via truck. It is not possible to have freight rail everywhere

Plan Regionally and Internationally

The public generally understood that rail functions both regionally and nationally, and advocated for collaboration and infrastructure enhancement in coordination with other states and with Canada's rail plans.

- Continue to improve Maine's regional freight/land use planning and economic development coordination
- Make rail investments that tie into New England and Canadian plans
- Position Maine to take advantage of Class 1 and regional rail improvements elsewhere in the US and Canada by implementing 286,000 lb gross weight capacity and higher track speed

Enhance Freight Rail Service

In northern Maine, when the MM&A filed for abandonment on a portion of its line, the concerns with the inadequacy of rail service and the cost/benefit trends of shipping by rail were significant.

- Shippers said that Maine needs container-train corridors

- Shippers said that freight rail shipping needs to be more reliable in terms of delivery time, cost, and reducing product damage
- Shippers also said that freight rail shipping needs better connectivity (interline connections)
- The rail lines said that the business community needs to increase freight rail utilization
- Improving freight partnerships with existing and potential manufacturers, big business, and others is seen as a key component and a critical challenge

Provide More and Enhanced Passenger Rail Service

In the southern part of the state there was consensus that maintaining passenger rail south of Portland is an important investment for the state to make. Generally, there was strong support in Portland for achieving additional passenger rail service to Brunswick and strong support in Lewiston for achieving passenger rail service to Lewiston/Auburn – and ultimately on to Montréal. Many believed that this would be a strong economic driver for western Maine.

- Strong support for current & future Downeaster intercity passenger rail service

Explore commuter rail opportunities radiating outward from Portland Other Regional Comments

Other regionally based comments included:

- Maintain the state's forest industry by financially supporting freight rail lines
- Preserve service on the MM&A proposed area of abandonment
- Grow Auburn's intermodal facility
- Invest in the Mountain Division line as an economic driver for western Maine. (It should be noted that Westbrook abutters of the Mountain Division line were not enthusiastic about the line's proposed renewal due to quality of life concerns.)

Enhance Public Education

Another topic heard repeatedly was the general need for public education on the importance of rail in Maine and how rail funding is developed. The people who attended the public meetings were generally rail advocates and believed that the remainder of the populace would benefit from more and better information.

- Enhanced shipper outreach and interaction is necessary in order to make freight rail work successfully
- Greater public interaction and understanding is needed in order for the general public to support additional rail funding and expansion

Draft Criteria

- Seek greatest public return on investment
- Priority given to shared use rail lines. This criterion did generate some concern in northern Maine where passenger rail is not available.
- Multimodal connectivity is important: Integrate other transportation modes
- Focus investments on Maine, New England and Canada rail plan priorities
- Investments should be based on their ability to attract new business and retain existing customers
- Economic development impacts should be a key criterion

- Invest in projects that will improve the volume of goods and number of people moved
- Focus rail investment on areas where capacity and reliability intersect

1.5 Review of Freight and Passenger Rail Planning Studies

Numerous reports and studies on elements of Maine's rail system have been prepared in recent years. As part of the State Rail Plan preparation, pertinent freight and passenger studies have been reviewed to provide guidance and context on key rail issues, strategies and recommendations. Studies on the economy and funding of transportation in Maine were also reviewed. Summaries of relevant reports are located in Appendix M.

These reports, studies and findings suggest that transportation of both goods and people is focused on the highway system, and that multi-modal solutions are desirable from the perspective of economic and environmental benefits, land use development and energy consumption. Highway congestion, especially in southern Maine, is a growing concern to both citizens and government. Residential and commercial development trends outside of core urban and town centers contribute to an increasing reliance on highways for mobility. Many of these reports suggest that this sprawl development will limit the viability of future public transit options for personal mobility.

Connecting Maine: Highlights from Maine's Long Range Transportation Plan is the state's integrated, long-range multimodal transportation plan through 2035. It was prepared by MaineDOT with the participation of the state's 11 RPOs. MaineDOT held more than 20 public meetings to review the draft report. The plan identifies transportation issues; social, land use and economic needs; and future challenges and opportunities that are unique to the state. Goals and objectives, as well as strategies for meeting future needs, are presented in the final report.

Key issues and future trends that affect transportation in the State of Maine include:

- Slow statewide population growth, but congestion in some of Maine's coastal communities.
- Employment shifting from manufacturing to service jobs, increasing commuting time for some residents.
- Continued reliance on freight facilities because some industrial sectors (e.g., paper) remain strong.
- Aging population and the need to adapt to this changing demographics.
- Awareness that the state's potential economic opportunities and growth are dependent upon transportation infrastructure to support trade opportunities.
- The financial gap between current funding and the amount required to meet strategic needs.

MaineDOT identified five strategic goals:

- Ensure a safe and secure transportation system.
- Ensure the sustainability of Maine's transportation system.
- Promote economic viability and competitiveness.
- Enhance quality of life by developing and implementing transportation programs that enhance communities and Maine's natural environment.
- Enhance public awareness and participation.

1.6 Evaluation Criteria

The development of evaluation criteria is based on the core goals and objectives of the State Rail Plan. The goals are summarized as follows:

1. Safety – provide enhancements to overall transportation system safety.
2. Mobility - improve movement of both people and goods to, from and within the state.
3. Preservation – preserve and strengthen the rail system to meet current and future transportation needs.
4. Enhancement – make strategic investments in the rail system to maintain and grow Maine based business and industry and to provide modal choices for Maine residents and visitors.
5. Sustainability – enable rail network to contribute to broader state goals of environmental protection, economic and community development, and reduced reliance on fossil fuels to power transportation networks.
6. Financial viability – provides equitable funding programs that protect the public interests, encourages private investment, and promotes modal equity.

The State Rail Plan goals mirror and expand on the goals identified by the DOT in the Long Range Transportation Plan, Connecting Maine:

Goal 1: Ensure personal safety and property and infrastructure security through ongoing maintenance and investment.

Goal 2: Improve mobility and accessibility of goods and people through greater rail system integration and interconnectivity of transportation modes.

Goal 3: Preserve and strengthen the existing rail system to efficiently serve the long-term needs of current and future customers.

Goal 4: Enhance the freight and passenger rail system efficiency for Maine's businesses and residents.

Goal 5: Ensure the continued availability of a rail system to improve the quality of life for Mainers and enhance the energy efficiency, environmental sustainability necessary to support the states' economic competitiveness.

Goal 6: Identify sources of adequate, stable and predictable funding, through public and private ventures that will support the development and operation of a rail transportation system.

1.6.1 Development of Program Criteria

The Maine State Rail Plan evaluation process is derived from the program criteria of the Federal Railroad Administration (FRA), Maine Sensible Transportation Policy Act (STPA), and MaineDOT Industrial Rail Access Program (IRAP). These program criteria were used to evaluate projects identified in the course of development of the State Rail Plan.

The FRA guidance suggests that a state rail transportation authority should take into consideration funding sources, effects on other modes of transportation, rail capacity and congestion effects, regional balance, environmental impact, economic and employment impacts, and service measures in evaluating rail projects.

The Sensible Transportation Policy Act (STPA) requires a full evaluation of reasonable transportation alternatives for significant highway construction or reconstruction projects. While not directly applicable to railroad projects, STPA sets general parameters for evaluation of state funded transportation projects. The determination of whether a project falls under STPA is determined by MaineDOT in conformance with the STPA Rule.

The Industrial Rail Access Program has been designed by the MaineDOT to encourage economic development and increase the use of the freight rail transportation mode. The program provides for a maximum 50% share of project costs by the state, with the balance coming from private sector participants.

Projects are evaluated using these ten criteria:

1. Job creation/retention
2. New investment
3. Intermodal efficiencies
4. Private share of project cost - the greater the share the higher the rank
5. Anticipated decrease in air emissions
6. Anticipated decrease in highway maintenance costs
7. Anticipated decrease in highway congestion
8. Transportation and logistics cost savings
9. Improvements in rail service
10. Benefit-Cost ratio

The IRAP program defines five project categories: accelerated maintenance, rehabilitation, new siding improvements, right-of-way acquisition, and intermodal facility construction. However, the Department does consider a range of projects that enhance rail transportation such as development of bulk materials transfer systems.

Benefit-Cost Ratio has its origins in many federal programs. The benefits are defined as the costs avoided or gains achieved as a result of the project action. The standard federal benefit-cost methodology recognizes benefits relating to transportation efficiency [changes in transportation costs, producer surplus, and line operating profit/loss], business relocation costs, unemployment, and highway impact costs.

Freight rail criteria focus attention on the needs of shippers, regions and economic development opportunities. Passenger rail criteria focus on the demographics and land use patterns that impact ridership potential and connectivity to other transportation modes (highway and transit, pedestrian and bicycle, and station area development potential).

The State Rail Plan findings recognize that highway vehicular traffic will continue to grow. However, rail system improvements are expected to divert some portion of traffic from the highway, thereby reducing the growth of vehicle miles traveled and related demand on the highway system.

1.6.2 Public Benefit

The foundation of good public policy is that public investments should produce public benefits. The converse is that public investments should not benefit private interests. However, in the case of transportation investments, private benefits are often a direct result of public benefits. The public benefit criteria for transportation system

investments place the highest priority on safety, security, and maintaining the system in a state of good repair. These criteria generally require replacing and upgrading system elements, providing new capacity, and improving service speed, reliability, and availability. These later outcomes accrue benefits to the users of the transportation system – including the general public for personal mobility, or businesses that need to move goods to and from the manufacturing/distribution system.

Improved transportation systems contribute to increased employment, improved business competitiveness, and growth of the tax base through industrial expansion. Investments in transportation systems may also contribute to highway congestion mitigation and improved air quality.

Public investments in freight railroad networks provide for modal equity in that rail shipments serve a vital role in development of a balanced intermodal transportation system. Railroads have unique characteristics that contribute to the efficient movement of goods: rail is three times more energy efficient than truck; and rail has the capability to transport a large variety of materials ranging from forest products to industrial products long distances at low cost. Freight rail services are an important element of the Maine economy, and therefore provide a wide range of benefits to the region.

Although the Maine rail network does not currently face capacity constraints from volume of traffic this factor does present the challenge that the current low volume of rail traffic does not generate sufficient revenues necessary for maintenance, infrastructure improvements, and timely service to attract growth to the network.

Rail investment benefits targeted would include:

- Multimodal transportation system safety, security, capacity, speed, and reliability;
- Reduce growth of highway congestion, highway user costs, and highway maintenance and improvement needs;
- Fuel efficiency and reduced GHG emissions; and
- Industry competitiveness.

The criteria are to be used to evaluate projects that will enable the rail network to meet both current and future demands. Projects will be measured by their effectiveness in addressing the system's current challenges and constraints. The economic development, environmental, safety (operations), security (external threats, system redundancy) impacts will be weighed vs. feasibility and benefit/cost analysis within a corridor context.

“The rising importance of the service economy will not diminish the need for traditional transportation services. Bulk transportation – by railway, waterway, highway, or pipeline – will continue to account for the great majority of freight transportation. Efficient movement of grain, coal, ores, and other bulk commodities will continue to be a basic requirement of the freight system and an underpinning of the national economy.”⁴

⁴ “Economy: Rapid Change in Manufacturing and Service Sectors.” See “Transportation Policy: Evolution of Federal Freight Transportation Policy,” available at <http://www.ops.fhwa.dot.gov/freight/adfrmrk/index.htm>.

1.6.3 Railroad Project Criteria

Criteria 1 – Safety

Projects must enhance public safety and safety of railroad personnel and operations. Priority Projects:

- a. Elimination or upgrading of at-grade highway/railroad crossings
- b. Improvement to railroad track structure (track, bridges, culverts, drainage)
- c. Trespass prevention measures
- d. Enhanced hazardous cargo handling measures
- e. Public outreach including Operation Lifesaver and related activities

In formulating criteria for the State Rail Plan the MaineDOT has emphasized that safety is of prime importance. Safety is a significant concern for railroad operators and their employees, customers and the general public.

Criteria 2 - Economic Development

Projects must provide economic benefit to a community, region or the state. As measured by:

- a. New investment in plants or equipment
- b. Added employment
- c. Increased local, regional or state tax revenue
- d. Growth of exports (inter-state or international)

MaineDOT recognizes that investments in railroad facilities may produce multiplier effects on local, regional and statewide economies. This factor goes beyond the basic Benefit-cost analysis, and targets private sector investments that support and make use of the transportation infrastructure improvements.

Criteria 3 - Railroad Operations

Projects must increase the utilization of a rail line or route segment. As measured by:

- a. Increases in carloads (or tons) handled
- b. Increases in passenger miles/boardings
- c. Increases in revenue service

These types of projects are geared toward increasing asset utilization in order to achieve a positive benefit to cost ratio of public investment. The data are standard performance indicators used by the railroad industry and are readily available from revenue and operations databases.

Criteria 4 - Line Conditions

Projects must achieve appropriate level of State of Good Repair of rail lines or route segments. As measured by:

- a. Upgrading by at least one level of FRA Class of Track⁵
- b. Upgrading to maintain line segment to FRA Class of Track
- c. Increased reliability (on time performance)
- d. Decreased transit time

The FRA has established nine classification levels for track, with maximum permissible operating speeds for passenger and freight service increasing as the classification number increases. This measurement is an indicator of the quality of the track and supporting structures, and in turn the quality and level of service that can be provided on the route segments.

Criteria 5 – Rail System Standards

Projects must achieve improvements to the overall railroad system. As measured by:

- a. Increases to vertical clearances to 20'-8" (Phase II AAR Plate H for double stack intermodal operations)
- b. Increases to maximum weight on rail to accommodate emerging national freight car standard of 286,000 lbs (or greater)
- c. Enhancements to or development of new intermodal terminals and transloading facilities
- d. Improved connectivity to the national and regional rail network
- d. Enhanced compliance with Americans with Disabilities Act requirements (passenger stations and facilities)

While this State Rail Plan will not promulgate specific design requirements for railroad facilities the adaptation of Maine's railroad network to national standards is essential. The FRA, AAR and Car Weight criteria represent industry standards that will enable the Maine railroad system to provide an improved level of service, increased system capacity and productivity.

These factors will increase the capability of the rail transportation system to compete for discretionary freight and passenger business and is consistent with the State's desire to encourage alternative transportation choices. Benefits will accrue to the railroads, their customers, the general public and the economy of the state.

Criteria 6 – Priority Corridors

Projects must provide for improvements to levels of service within priority trade corridors. As measured by:

- a. Enhancement of corridor multimodal service alternatives
- b. Enhanced connectivity to ports, intermodal transfer facilities (both freight and passenger)
- c. Increased speed and on time performance

The State Rail Plan has established a working list of priority corridors that provide essential routes for either goods movement or personal mobility, or both. These corridors provide connectivity to natural resources, regions and employment centers, and are further discussed in Chapter 6.

⁵ The Federal Railroad Administration prescribes minimum safety requirements for railroad track that is part of the general railroad system of transportation (49 CFR 213.1). Classes of Tracks range from Class 1, that allows 10 mph freight speed and 15 mph speed, to Class 9 for 200 mph operations.

Criteria 7 - Operational Costs

Projects must enhance the ability of the railroad to meet operational costs without ongoing requirements for public subsidy.

As measured by:

- a. Utilization of design standards that extend life cycle of improvements
- b. Capital improvements that reduce long term O&M costs
- c. Reduction of incremental O&M costs through shared use of assets

The MaineDOT recognizes that railroad services may require monetary support for annual operations and maintenance (O&M). While this need is typically associated with passenger services there may be situations in which a decision is made to operate freight service on a line with limited revenue generating capacity, yet provides a service deemed essential to the public interest. In such situations the State may elect to provide O&M costs under terms of an operating agreement or other means. Therefore, projects should be planned to reduce O&M costs by enhancing services that may attract new revenue opportunities, and provide for best practices for extending life cycle of improvements.

Criteria 8 - Governmental and Community Support

Projects must have documented local and institutional support. As measured by:

- a. Consistency with regional transportation plans
- b. Consistency with land use and zoning regulations
- c. Proximity to industrial parks/business generators
- d. Appropriate population density (passenger rail)
- e. Adequacy of support facilities

MaineDOT recognizes that railroad infrastructure projects have statewide or regional benefits, but that there are also local impacts to host communities along the route. Therefore, projects must have demonstrable community support.

Criteria 9 – Maine Rail Activity

Projects should increase the level of utilization on rail lines or route segments within the state of Maine. As measured by:

- a. Increases in carloads originating or terminating in Maine
- b. Increases in overhead rail traffic traveling through Maine
- c. Increases in number of rail passengers boarding or alighting in Maine
- d. Increases in railroad and other employment in Maine
- e. Increases in business growth of rail shippers

MaineDOT recognizes that increased economic activity is a critical measure of success of any public investment in transportation infrastructure. These measurements directly identify the benefits accruing to the State, its communities as well as the operating railroad. This criterion is directed toward the anticipated level of revenues and related business activity generated by the project. MaineDOT also recognizes that freight passing through the State over the railroad network, known as overhead or bridge traffic, is freight that most likely would have traveled through the State by truck on the State's highway system or local roads if the rail service were not available.

Criteria 10 – Non-State Funding Opportunities

Projects proponents should identify and pursue non-state funding resources, including federal and private funding.

As measured by:

- a. Meeting criteria for federal funding programs
- b. Meeting criteria for intercity passenger rail funding sources
- c. Meeting criteria for private and other innovative funding tools

MaineDOT recognizes that state funding may not be available to meet all the needs of the state's multimodal transportation system. This criterion seeks to encourage project proponents to explore and evaluate sources of funding beyond the resources of MaineDOT. To the extent that some state transportation funding may be required, the use of such state funds should leverage as much external funding as appropriate. Private funding sources may include the operating railroad and third parties, much like the successful MaineDOT IRAP.

Criteria 11 – Natural Resource Impacts

Projects must be planned and implemented in a manner that minimizes the impact to environmental resources and socioeconomic resources.

As measured by:

- a. No impact (FONSI)
- b. Minor impact (mitigation measures incorporated in project plans)
- c. Status of permitting

MaineDOT recognizes that projects vary in complexity and will require careful planning and design to address resource protection measures.

Criteria 12 – Regional Coordination

Projects should be compatible with regional railroad operations as well as consistent with evolving regional plans for intercity passenger rail, including high-speed rail, and national and international freight movement requirements.

As measured by:

- a. Increases in interstate and international rail freight tonnage/carloads
- b. Increases in rail passenger services and utilization
- c. Progress toward development of high-speed intercity passenger rail projects consistent with a coordinated effort with neighboring states and provinces
- d. Establishment of regional partnerships and agreements

MaineDOT seeks to improve the connectivity of Maine's rail system with that of the regional and national rail service network, for both freight and passenger rail services.

CHAPTER 2 | *Freight Rail System*

The purpose of this chapter is to provide an inventory and description of the statewide freight rail network. Ownership, operations and facilities of the railroad system are explained, and placed within the context of the state's multi-modal transportation system. This chapter is focused on freight rail operations, and the following chapter will focus on passenger rail services. However, there is some overlap due to shared use of freight corridors for passenger rail operations.

This chapter also provides information and data related to goods movement within, to and from the State of Maine. Rail carries a small yet still important share of goods in Maine, and issues and challenges to that constrained market share are identified. The regional and national context of both the rail system and goods movement needs of the state are described.

Maine's freight railroad network can be described today as adequate to meet current demands, but clearly in need of improvement to successfully attract new levels of business.

2.1 *Overview*

The freight railroad system in Maine has played an essential role in the state's economy for well over 150 years. Historically, much of Maine's rail network was built to link Maine and its ports to Montreal and the Great Lakes rather than to the rest of the continental United States. That fact combined with its geographical location of being surrounded by Québec and New Brunswick on the west and east, and New Hampshire to the south, meant that all freight rail movements in and out of Maine moved via either New Hampshire or Canada. This international feature of Maine's rail system is an important factor in the evaluation of future rail utilization.

National Context

There are seven Class I railroads¹ and over 500 regional and short-line railroads operating in North America. The seven Class I railroads, all privately owned, are: Burlington Northern/Santa Fe; the Canadian National; Canadian Pacific; CSX Transportation; Kansas City Southern Railway; Norfolk Southern; and Union Pacific. These railroads typically originate over 80 percent of national rail traffic and generate over 90 percent of freight railroad revenue. Figure 2-1 illustrates the North American Class I railroad network.

Approximately 560 regional (Class II) and short-line (Class III) railroads operate over a 40,000 mile rail network. They originate about 15 percent of national rail freight traffic. Regional and short-line systems play a critical role in the nation's freight-rail network. These railroads are important partners for the Class I railroads because they often provide the first and last miles of service in the "door-to-door" collection and distribution of railcars. Regional and short-line systems provide direct rail service for shippers that rely on rail to move heavy or bulk commodities cost-effectively. Without regional and short-line rail service, these shippers would face increased costs for shipping and receiving materials.

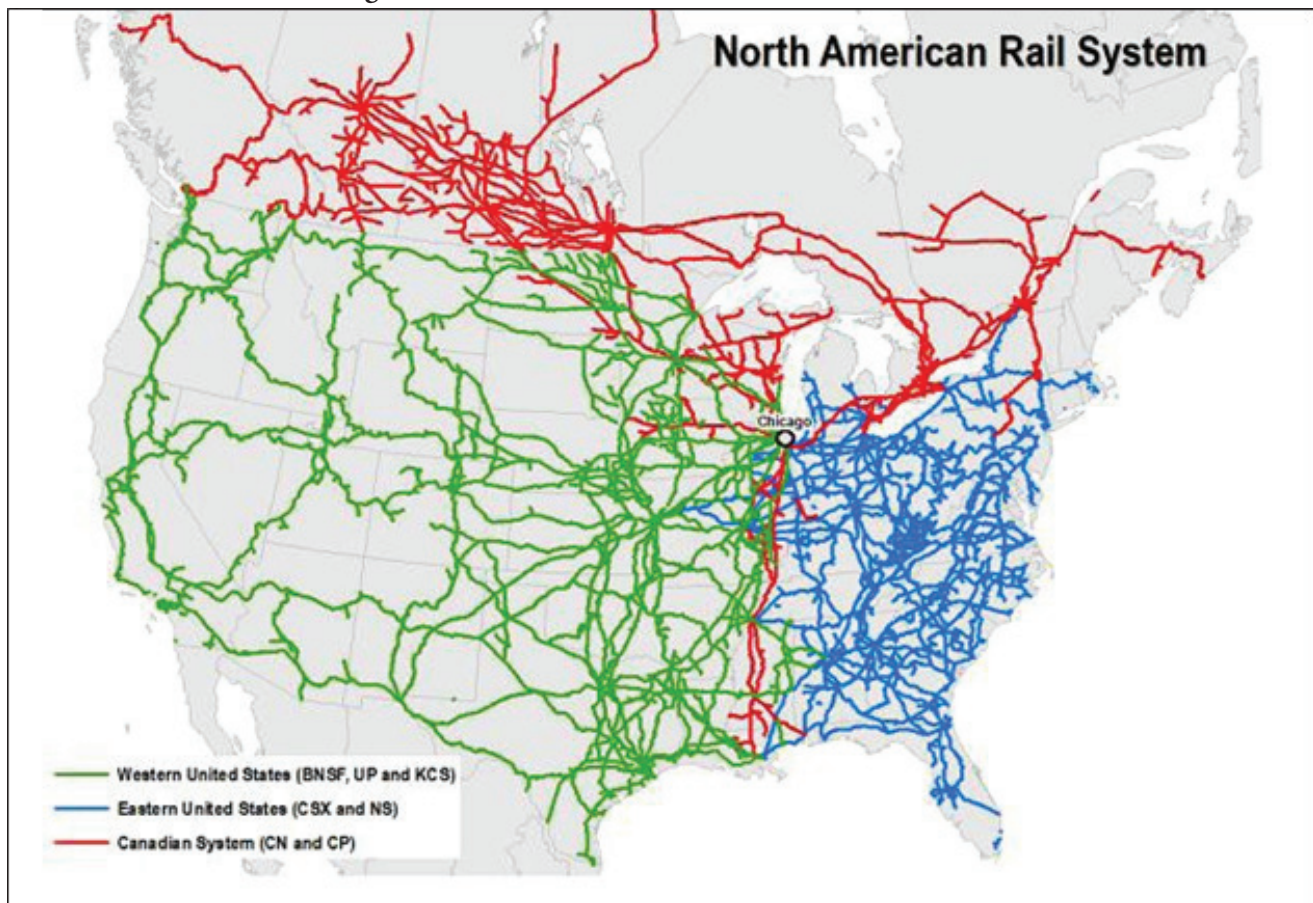
Freight railroads carry a wide range of products and materials, but the most important commodity from a tonnage and revenue perspective is coal for domestic electrical power plants or for export. Coal represents some 45 percent of tonnage and 24 percent of revenue for the Class I railroad system. Other significant commodities include chemicals, construction materials, paper products, forest and farm products, nonmetallic minerals, automobiles and other transportation equipment and solid waste.

¹ The Surface Transportation Board designates railroads by revenue earned: Class I (>\$433M), Class II (Regional \$20M, but less than \$433M) and Class III (local or switching or terminal <\$20M) (2011)

Freight railroads are generally privately owned. Shippers who use freight rail service are interested in moving their goods as fast as possible, at the lowest cost, and in the safest manner available. Freight railroads make every effort to accommodate these shipper requirements, but must also meet their business needs and must operate at a profit.

In 2011, U.S. railroads hauled nearly 2 billion tons of freight and earned about \$65.0 billion in freight revenue. The industry uses the ton-mile as the basic unit of measurement, and Class I railroads carried more than 1.72 trillion ton-miles in 2011. This represents 39.9 percent of total U.S. tons miles.²

Figure 2-1: North American Class I Rail Connections



Source: Atlantic Institute for Market Study

Of the seven Class I railroads, none operate in Maine, Vermont or New Hampshire. Canadian National does interchange with the Maine Northern Railway (MNR) at St. Leonard, New Brunswick and the Central Maine and Quebec Railway (CMQR) at St. Jean, Quebec near Montréal. CMQR also connects to CP Rail east of Montréal. At St. Rosalie, Quebec, St. Lawrence & Atlantic connects to CN via its sister railroad, the St. Lawrence & Quebec. Pan Am Railways, operator of the former Boston & Maine and Maine Central railroads, has connections directly to CSX in Massachusetts and New York and to NS by way of Pan Am's alliance with NS in the formation of the jointly owned Pan Am Southern between Ayer Massachusetts and the Schenectady area of New York. Actual connection to NS proper is then via NS trackage rights over the Canadian Pacific between the Schenectady area to Binghamton, New York (secondary NS line) and Harrisburg, Pennsylvania (connection to a primary NS line).

² Association of American Railroads data, 2011

The closest United States Class I carrier to Maine is CSX at Worcester, Massachusetts. Pan Am Railway at Ayer, Massachusetts is part of the joint venture between Pan Am and Norfolk Southern called Pan Am Southern.³ As noted in the above paragraph and footnote.

2.1.1 Freight Rail Railroad Ownership or Operations in Maine

Unlike much of the rest of the United States in which rail systems were established to connect regions to the rest of the country, many of Maine's rail lines were designed to link the state and its ports to Montréal and the Great Lakes.

Maine's freight rail system consists of two Class II railroads, six Class III railroads, and one terminal and switching operation. The Class II rail system and Class III system comprise approximately 51 percent and 49 percent of the state's active route miles, respectively (Table 2-1). Based on the best available data, and as of April, 2013, the rail system in Maine includes the following route mileage:

Table 2-1: Total Serviceable Lines by Operating Railroad, 2013

Railroad Operator	Mileage
Class II	
Central Maine and Quebec Railway	222.23
Pan Am Railway	394.67
Subtotal	616.90
Class III	
Maine Northern Railway	232.64
Maine Eastern Railroad	90.69
Eastern Maine Railway	137.31
Saint Lawrence and Atlantic Railroad	85.00
New Hampshire North Coast Railroad	0.30
Subtotal	544.06
Terminal and Switching	
Turner's Island, LLC	1.57
TOTAL	1, 162.53

Of the 1,197 miles of total serviceable lines, 94 percent (1,130 miles) are currently active freight lines connected to the North American rail system. The remaining 6 percent (67 miles) are operational track segments that are not currently providing freight service. Table 2-2 provides a summary of the currently inactive freight line, all of which are owned by the State of Maine.

³ As a result of the agreement between PAR and Norfolk Southern Railroad (NS), the PAR Freight Main between Ayer, MA and Burnt Hills NY (Schenectady area) is owned by a new entity created jointly by NS and PAR, called Pan AmSouthern (PAS) and marketed as the Patriot Corridor. This joint venture is operated by employees of the Springfield Terminal Railway, a wholly owned subsidiary of Pan Am Railways.

Table 2-2: Inactive Serviceable Lines, 2013

Location	Mileage
Brunswick to Augusta (Maine Eastern)	32.72
Belfast and Moosehead Lake (B&ML) State Owned	32.80
Grimel to Lisbon Falls (Pan Am)	1.75
TOTAL	67.27

Maine Eastern Railroad (MER)

The Maine Eastern Railroad (a subsidiary of the Morristown & Erie Railroad) operates the state owned Rockland Branch under terms of a lease and operating agreement from the MaineDOT. Maine Eastern provides both freight and passenger excursion services on the line, and also has an agreement and operating rights to provide freight service on the state owned Lower Road branch between Brunswick and Augusta. The Rockland branch runs from Brunswick to Rockland.

Maine Northern Railway (MNR)

The Maine Northern Railway (a subsidiary of the New Brunswick Southern Railway) operates on the state owned Aroostook Lines abandoned by Montreal, Maine and Atlantic Railroad (MMA) in 2010. In addition to the approximately 242.7 miles of rail line acquired by the state⁴. Another 3.03 route miles is owned by the city of Presque Isle, accessing the industrial area at the airport.

MNR has trackage rights over MMA between MP 109, north of Millinocket, south through Millinocket to Brownville (MP 72.4) and from there upon the three mile spur north to Brownville Junction Yard; the interchange point between MMA and Eastern Maine and now MNR. In late 2012 and early 2013, a new direct connection was constructed by MNR between the MMA main line and Eastern Maine (sister railroad of MNR under J. D. Irving's New Brunswick Southern Railway). About two miles east of the yard at Brownville Junction the two railroads cross each other with the MMA bridging over the Eastern Maine. A short ½ mile connecting track was built to allow direct movement of trains to and from the Eastern Maine east towards St. John and the MNR north on its trackage rights on MMA. This new direct connection saves 7.5 miles of running further south to Brownville and then north to Brownville Junction Yard for traffic between MNR and Eastern Maine. MNR traffic going west from Brownville Junction on MMA may continue to use the original, longer route.

MNR has reactivated, the unused yard at Oakfield (MP 148.5) as its operational hub for the Aroostook lines. Forest products continue to be the major commodity carried on MNR which include finished lumber, wood products, wood chips and paper. Also carried are paper mill chemicals, propane, diesel oil, vegetable oil, fertilizer and aggregates.

⁴ The 242 miles includes 8.67 miles of line currently owned by the Town of Fort Fairfield between there and Easton, which is soon to be acquired by the state and 15.57 miles between Caribou and Limestone, not currently in operation.

Central Maine and Quebec Railway (CMQR)

The CMQR began operations June 2014 after purchasing the assets of the Montreal Maine and Atlantic (CMMA) out of bankruptcy. The CMQR owns more than 470 route miles of former MM&A track, serving customers in Maine, Vermont, and Quebec. It owns 222 route miles in the State of Maine. The CMQR is a Class II railroad with main line operations conducted daily between Millinocket and Searsport, Maine, and between Brownville Junction, Maine and Montréal in Canada. The CMQR connects to the CN and to points west via both CN and CP near Montréal, Canada. It connects to the New Brunswick Southern Railroad via the Eastern Maine Railroad which connects to the CN in St. John, NB, Canada. The CMQR provides the shortest, most-direct rail link between northern Maine, Saint John, New Brunswick and Montreal. In addition, the CMQR provides access to port facilities at St. John, New Brunswick and Searsport, Maine. The route between Searsport and Montréal is able to accommodate double stack intermodal services and the newer 286,000 lb. rail cars. From 2003 to June 2014 the lines were owned and operated by the MMA.

Due to a decline in traffic, the MM&A filed an abandonment application with the Surface Transportation Board (STB) in 2010 to cease service along some 233 miles of its system. The specific lines affected by this action are illustrated in Figure 2-2 and are listed below:

- Madawaska Subdivision MP 109 to MP 260
- Presque Isle Subdivision MP 0.0 to MP 25.3
- Fort Fairfield Subdivision MP 0.0 to MP 10.0
- Limestone Subdivision MP 0.0 to MP 29.85
- Houlton Subdivision MP 0.0 to MP 16.90

The Maine Department of Transportation acquired these lines from MM&A to protect and preserve this critical rail freight corridor. The citizens of Maine provided funding for the acquisition in a June 2010 referendum, and MaineDOT secured federal funds to rehabilitate the lines. The acquisition agreement enabled the MaineDOT to solicit an independent operator with trackage rights over MM&A to provide direct connections to both the CN at Van Buren/St. Leonard at the north end, and to NBSR (EMR) at Brownville Junction on the south end of the lines. The Maine Northern Railway (MNR) was the successful bidder for operation of these rail lines. MNR is a subsidiary of the New Brunswick Southern Railway which is in turn a subsidiary of the J. D. Irving Co., Ltd. of New Brunswick. The Eastern Maine Railway is also a subsidiary of the New Brunswick Southern Railway for operations within the State of Maine.

Figure 2-2: Map of MM&A Abandonment



Pan Am Railways (PAR)

The Pan Am Railways in Maine operates the former Maine Central Railroad from Portland to the north, and the former Boston & Maine railroad from Portland to the south. The combined systems were once known as the Guilford Rail System. PAR is a privately held Class II rail carrier with operations in five New England states and New York. Its operational headquarters are located in North Billerica, Massachusetts. PAR maintains equipment repair shops in Waterville, Maine.

Pan Am's route in Maine runs from South Berwick to Mattawamkeag with branches serving major paper mills in south central Maine. PAR owns or operates approximately 395 miles of railroad in Maine. PAR has connections to the St. Lawrence and Atlantic system at Danville Junction, Montréal, Maine & Atlantic at Northern Maine Junction, and the Eastern Maine RR (NBSR) at Mattawamkeag. PAR recently sold an isolated branch between Calais and Woodland, Maine to Woodland Rail, LLC, an entity established by the owners of the pulp mill at Woodland. Operation of this 11 mile route is now by the Eastern Maine Railway, a subsidiary of New Brunswick Southern Railway with a connection to that railroad at St. Stephen, New Brunswick across the St. John River from Calais. In late 2009, PAR started providing service along a six mile segment of the State of Maine owned Lewiston Lower branch line from Brunswick to Topsham.

As a result of an agreement between PAR and Norfolk Southern Corporation (NS), the PAR Freight Main between Ayer, Massachusetts and Burnt Hills, New York (Schenectady area) is owned by an entity created jointly by NS and PAR, the Pan Am Southern (PAS). This portion of the system is marketed as the Patriot Corridor. This joint venture is operated by employees of the Springfield Terminal Railway, a wholly owned subsidiary of PAR. Significant capital investments in the Patriot Corridor are designed to increase capacity and reliability and have the potential to improve rail market opportunities and connectivity to and from Maine.

St. Lawrence & Atlantic Railroad Co. (SLR)

Headquartered in Auburn, Maine and Richmond, Quebec, the SLR operates over 260 miles of contiguous mainline track between Portland, Maine and Ste. Rosalie, Quebec.⁵ Within Maine the railroad operates on slightly more than 85 miles, of which 0 25.7 miles are state owned right-of-way.

The SLR serves warehouse distribution, intermodal and bulk transloading facilities in Maine and provides a key transportation link through Lewiston/Auburn, Mechanic Falls, and South Paris, Maine, connecting to Québec and the CN Alliance routes. A key transportation link is the 35-acre Maine Intermodal Terminal, part of the CN intermodal network, which provides double-stack container service complemented by domestic trailer service to both local and regional locations.

The SLR connects to Pan Am at Danville Junction, Maine, and through that connection provides direct rail links to many of the paper mills in Maine and points south through CSX (CSX) and Norfolk Southern (NS). The SLR connects to its sister railroad, the St. Lawrence & Québec (SLQ) at the New Hampshire-Québec border continuing on toward Montréal and connections to CN railway. SLR's primary commodities include the three key forest products of lumber, pulp and paper, as well as chemicals and agricultural products.

The Eastern Maine Railway (EMRY)

Headquartered in St. John, New Brunswick, the Eastern Maine Railway (EMRY) is a non-operating subsidiary of New Brunswick Southern Railroad (NBSR) created as a holding company to own the trackage in the State of Maine. The operations on the line are provided by the NBSR, and both NBSR and EMRY are holding companies of J.D. Irving Limited of Saint John. The companies began operations in early-January 1995 following the abandonment of the Canadian Pacific lines in Maine on December 31, 1994. EMRY interchanges traffic with MM&A at Brownville Junction and Pan Am at Mattawamkeag. With the recent formation of the Maine Northern Railway (MNR), Eastern Maine also interchanges with MNR in the Brownville area through trackage rights over MM&A south of Millinocket.

The NBSR operates an approximately 265.5 mile railway system using the former Canadian Pacific Railway mainline between Saint John, New Brunswick and Brownville Junction, Maine. There is also a branch between McAdam and St. Stephen that connects to an isolated section of the former Maine Central Railroad and until recently operated by PAR between Calais and Woodland, Maine. NBSR subsidiary Eastern Maine Railway is now operating the 11 mile segment, as well as 28.5 miles between Madawaska and Van Buren, Maine in Aroostook County. NBSR also operates a three mile spur in Saint John to serve the port on the lower west side of the city. NBSR crosses the St. John River in Saint John using its Reversing Falls Railway Bridge and this connects with the Canadian National Railway in St. Leonard New Brunswick making a connection with Canadian National Railway (CN) at Island Yard in the city's east end.

5 Within Canada the operations are performed by SLR's sister railroad, the St. Lawrence & Québec RR

New Hampshire Northcoast Corp.

Only a very short portion of this railroad's track crosses into Maine and the railroad does not serve any freight customers in the State of Maine.

Turners Island LLC (Terminal Operator)

The 1.6 mile Turners Island terminal railway connects with Pan Am Railways in South Portland for shipping destinations nationwide. Goods are shipped by barge or rail via bulk cargo off loading areas, roll on/roll off ramp for marine-marine or marine-rail transfers, heavy lift services, construction and demolition debris transloading area, and bulk storage. Turners Island is a privately owned and operated marine-rail cargo terminal located in South Portland, Maine. The bulk storage consists of 14 acres of open storage at the terminal, 84 acres of open storage accessible by rail and located in Scarborough, Maine, and 9,000 square feet of dry warehouse space with loading docks, parking, and rail access.

State of Maine Ownership (SMO)

The capacity of the state's rail network to meet future needs is a serious concern to policy makers at the state, regional and local levels of government. The Maine rail system consists of active, inactive, abandoned lines, and rights of way converted to recreational trails (Figure 2-3 and Table 2-3). Inactive lines are rail lines with the existing infrastructure in place but without regular service.

Since the Staggers Act of the 1970's, rail abandonments have been used as a method to reduce costs and improve operating efficiency of freight rail operations. Either immediately prior to or shortly after a railroad has indicated its plans to abandon a particular line, states may opt to purchase those lines for reuse or future use. Maine has taken advantage of this opportunity and has been actively engaged in the acquisition of railroad rights-of-way for several decades, and now owns approximately 586 miles of railroad rights-of-way. Of that mileage, approximately 407 miles are connected to the North American Rail system and 179 miles either have no track in place or are not directly connected to the rail system.

The preservation of rail corridors is in the public interest as a means of preserving the integrity of corridors for future transportation needs. State ownership of active rail lines/corridors is fairly common, particularly in the neighboring New England states of New Hampshire and Vermont. Appendix D provides a review of state ownership of rail lines throughout the U.S.

Table 2-3: Rail Ownership State of Maine, 2013 - Active Lines

Operating Railroad	Miles Owned by Maine	Miles Not Owned by Maine
Maine Eastern Railroad	89.49	1.20
St. Lawrence and Atlantic RR	24.27	59.29
Pan Am Railway	16.31	378.36
Maine Northern Railway	242.7	0
Belfast & *Moosehead Lake	32.8	0
Downeast Scenic Railroad	28.0	0
TOTAL	433.57	470.6

Inactive lines preserved by the State of Maine are summarized in Table 2-4.

Table 2-4: Status of Inactive Maine Owned Rail, 2010

Line	Status	Miles
Mountain Div. S. Windham to NH Line	Track in place	39.99
Mountain Div. S. Windham	Track removed	1.45
Brewer Jct. to Washington Jct.	Track in place *	30.35
Washington Jct. to Ayers Jct.	Track removed	85.76
Ayers Jct. to St. Croix Jct.	Track in place	12.56
Ayers Jct. to Perry	Track removed	8.69
TOTAL		178.80

There are also segments of rail utilized by both Class II and Class III rail carriers that are owned by municipalities as shown in Table 2-5.

Table 2-5: Municipality Owned Rail, 2013

Operating Railroad	Owner	Location	Miles
Maine Northern Railway	Town of Ft. Fairfield*	Easton to Ft. Fairfield	8.86
St. Lawrence & Atlantic RR	Cities of Lewiston & Auburn	Lewiston - Auburn Br.	3.84
Maine Northern Railway	City of Presque Isle	Presque Isle**	3.0
TOTAL			15.7

* In process of being acquired by Maine DOT

** Airport spur into industrial park at airport.

The status of Maine owned rail infrastructure is illustrated in Figure 2-3. Active, inactive, and abandoned lines are shown in the figure, as are those lines where the tracks have been removed for interim trail use.

Figure 2-3: State of Maine Owned Rail Status



2.2 Freight Rail Industry Development

Major domestic rail industry developments that have impacted Maine's rail system include the creation of Amtrak, railroad deregulation, local rail freight assistance funding, heavy axle load railcars and intermodal traffic.

The National Railroad Passenger Corporation, more commonly known as **Amtrak**, was created by the Rail Passenger Service Act of 1970 to relieve the freight railroad industry of the losses they had been experiencing in the operation of intercity passenger rail service. Amtrak began service on May 1, 1971 and assumed responsibility for intercity passenger services.

For many years Amtrak experienced difficulty achieving reasonable on-time performance. Corrective steps have been taken as Amtrak and states partnered for services resulting in funding for capital and operating improvements. The number of state-supported services has grown significantly in recent years as states have partnered with Amtrak for added routes and frequencies. In Maine, Amtrak is the contract operator of the Downeaster service.

Deregulation of the railroad industry by the federal government under the Staggers Act of 1980 and the Interstate Commerce Commission Termination Act of 1995 allowed railroads to more easily adjust services and rates, enter into service contracts, abandon unprofitable routes and sell off low density branch lines. These federal statutes permitted railroads to improve their competitive position in the market place and to attain profitability.

The Federal **Local Rail Freight Assistance** program was initiated by the Federal Railroad Administration as authorized by the Regional Rail Reorganization Act of 1973. The program was designed to provide temporary financial support for rail service continuation on lines in the Northeast not included in the Conrail system. After

1995, the program ceased being funded although the program is still authorized by federal law. The MaineDOT participated in this program and has maintained a revolving fund to provide low interest loans for freight rail projects.

Another major factor affecting the railroad industry is the emergence of increased **rail car weight limits** from the standard 263,000 pounds to 286,000 pounds. Rail cars of the new weight circulate throughout the North American rail system hauling a variety of commodities on Class I railroads, however, many short line and regional railroads are not able to handle these heavy cars due to track and bridge conditions..

A lengthy and costly effort was undertaken by the Class I railroads and a few short line and regional railroads to upgrade their lines to be able to accommodate the heavier cars. In Maine many short line and regional railroads cannot accommodate the emerging interline standard 286,000 pound gross weight railcar. Unfortunately, these are the railroads that are least able to afford the capital cost necessary to invest in track and bridges to be able to handle these railcars.

Both railroads and major shippers maintain that these track upgrades are a high priority to meet the needs of shippers to take advantage of the economies of using the 286,000 pound cars. More recently, Class I railroads have initiated carrying 315,000 pound cars on many of their main routes. Again, upgrading track and structures to handle the increase in weight from 286,000 to 315,000 pounds is a major and costly effort, and it is unlikely that short line and regional railroads could afford this cost to upgrade their track to handle such cars in the near future.

The intermodal revolution began in the late 1950's and today, **intermodal traffic** is an integral part of the nation's transportation system. Intermodal refers to goods moved using two or more modes of transport; that is, rail and truck, or ship, truck and rail. The vast majority of intermodal traffic is now handled in containers, which are transferred freely between railroads, trucks and ships. Some of this traffic is still handled in conventional trailer-on-flat car (TOFC) service.

Growth in rail intermodal traffic has been a significant factor in railroad traffic volumes in the past twenty plus years. The AAR reports that intermodal traffic tripled between 1980 and 2002 from 3.1 million trailers and containers to 9.3 million. Although this rate of growth has slowed between 2002 and 2007 and was substantially reduced during the 2008/2009 economic downturn, total intermodal units handled grew to 12.27 million in 2012. This growth, coupled with the projected doubling of the nation's freight volumes over the next 20 years, will result in increasing reliance of the nation's economy on the railroad intermodal network.

Maine railroads participate in intermodal traffic, connecting with ports on the seacoast and inland markets. The MaineDOT, City of Auburn and St. Lawrence & Atlantic Railroad collaborated in the development of an intermodal terminal in Auburn that serves the needs of many shippers and receivers throughout the state, many of whom do not have direct rail service. The successful development of the Auburn facility led to development of an additional site in Waterville served by Pan Am Railways. The City of Presque Isle developed an intermodal terminal at its Skyway Industrial Park, which sought to address needs in northern Maine.

Today Maine's railroads face many of the same challenges faced nationally in the 1970's prior to the Staggers Act and the successful reorganization of the Penn Central into Conrail. Many of the former reliable and consistent customers of the railroads have closed or relocated – many more are reliant on trucks for the bulk of their transport needs, and reduced volumes on many branch lines are leading to reductions in service levels that in turn pushes more traffic onto the highways.

Maine's freight rail system continues to play an important role from a regional perspective in as much as the network serves key industries in the state. Most notably, the pulp and paper and forest products industries are clearly reliant on rail freight for effective goods movement if they are to remain competitive in their markets. In addition, Maine's freight rail infrastructure also accommodates the intercity (Amtrak) passenger rail operations connecting Maine to Boston.

The viability of Maine's rail transportation system is strongly influenced by many regional and even international concerns and cannot be considered in isolation. The benefits of Maine's rail network would be lost, for example, without connections to the North American rail network through neighboring states and Canadian provinces. Without a regional rail network Maine would bear the burden of increased freight volumes diverted to trucks that contribute to congestion, air pollution, pavement and bridge wear and increased reliance on fossil fuels.

2.3 *Maine Freight Railroad Facilities*

Freight facilities, yards and terminals are locations where freight routes connect and/or terminate. They are essential elements of the system and their capacity and efficiency are important in attracting new or expanding existing rail freight customers. Rail terminals are the origins and destinations where freight is loaded or unloaded or where rail cars are assembled into trains to move products to other locations. In some cases they also serve as intermodal facilities.

The rail facilities, yards and terminals in Maine vary significantly in terms of size and function. They include intermodal facilities, medium to small rail switching yards and truck distribution centers. These facilities' function, size and importance have changed significantly over the last half century as both land use patterns and transportation systems have evolved in the state and the region.

A significant example of these changes within Maine can be observed in the shipment of potatoes. Prior to the completion of I-95 to Houlton in 1964, potatoes moved out of Maine in insulated boxcars, generally referred to as reefers, which is shorthand for refrigerated rail cars. In the case of potatoes, these cars were refrigerated during warmer months but used portable heaters in colder weather to keep the potatoes from freezing. By 1970 almost all Maine's potatoes were trucked from fields to processing plants, and then trailers and containers were used to move the processed products to market. Some small percentage of these trailers and containers may make part of their journey on an intermodal rail train, most likely loaded at an intermodal terminal outside of Maine's borders. Despite the rail transport history of Maine's potatoes, most of Maine's potato shipments today never move via a rail car.

The functions and operations of rail yards, some in place for over 100 years, have changed over time to serve new markets, accommodate changes in railroad ownership and resulting interchange locations and volumes, changes in railroad labor agreements and operating patterns, and to adjust to reduced levels of business. Table 2-6 describes the active rail freight yards in Maine. Some general metrics are provided to give a sense of the relative size of each facility, although the great variation in form and function does not allow ready comparison within the confines of a table.

The term "interchange" refers to the movement of a railcar from one railroad to another. In the normal course of moving commodities from origin to destination it is often necessary for a railcar to move from lines owned by one railroad to lines owned by another railroad. Interchange agreements dictate the mechanisms and business terms involved in such transfers. The standard interchange agreement specifies where and how the cars are

physically transferred, and when the responsibility and liability for the railcar and the lading transfers from one railroad to another. The interchange agreement will normally include terms allowing one railroad to operate over the lines of the other railroad for the purpose of interchanging cars. These rights, when used in interchange, are referred to as “access rights”.

2.3.1 Rail Yards

Yard infrastructure in Maine has been rationalized over the past 40 years to adapt to the ever reducing traffic volumes. During this timeframe, formerly critical inter-railroad interchanges have been de-emphasized, while other locations have been improved and developed. Generally, these adjustments were made incrementally as traffic levels or business conditions dictated.

Northern Maine Junction in Hermon, Maine (just west of Bangor) was once a very large, active yard where tens of thousands of cars per year were interchanged between the Maine Central (now Pan Am Railway) and the Bangor & Aroostook Railroad (now the CMQR). In recent times, interchange volume has reduced to just several thousand cars per year. As a result, the yard’s active tracks have been reduced. What remains is used to handle the reduced interchange volumes and to support local industry that has established itself within and near the yard.

In contrast to the Northern Maine Junction experience, Danville Junction in Auburn has experienced an increase in interchange volumes between Pan Am Railway and the Saint Lawrence & Atlantic. Historically, Danville Junction has been constrained by its track layout, especially for westbound (compass south) Pan Am freights to drop off and pick up cars. Typically, Pan Am Railway westbound freights did not stop at Danville Junction to set off and pick up, but would proceed to Rigby Yard in South Portland where cars for the St. Lawrence & Atlantic would be backhauled on an eastbound train for interchange since the track layout was more favorable in that direction. Currently, this small but strategic yard has been reconfigured to allow a more efficient operation, which will save both cost and transit time. These improvements were funded as a public-private partnership by both railroads and the state. The new configuration reduced the operating costs for the railroads and reduced transit times for rail freight traffic into and out of Maine via this growing gateway.

The interchanges between the state’s rail providers are key areas for improvement to the flow of goods into and out of Maine. MaineDOT assisted in the rehabilitation of the Danville Junction interchange to accommodate a proposed dedicated rail service to Montreal and points west. With this project, safety and efficiency was improved at Danville Junction and 36 hours of shipping time cut from rail shipments to the Midwest and west coast. State funding is being matched by Pan Am and the SLA for the project. Safety has been improved by the elimination of one grade crossing and the upgrading of signals and surface at the remaining crossing. With more efficient operations and switching at the junction, locomotive use and idle time have been reduced making better use of locomotives and reducing emissions.

Rigby Yard in South Portland had been the largest and most active rail yard in Maine when it served as the interchange point between the Maine Central Railroad and the Boston & Maine. Rigby also supported the significant rail freight traffic that existed in the greater Portland area. With the consolidation of those two railroads into Guilford Transportation Industries in 1984 (now Pan Am Railway), coupled with a decline of rail served industry in the Portland area, the need for this large yard with a capacity of over 2,000 rail cars was significantly diminished.

The driving factor in utilization of Rigby for the last several years is the operating strategy of Pan Am Railway. Traditionally, Rigby was a location where train crews were changed and trains were “re-blocked” both entering and leaving Maine. Pan Am has been using Waterville Yard and yards in Massachusetts to perform more of the

functions previously provided at Rigby. The intent is to reduce operating cost and increase the average velocity of freight trains that can generally run through Rigby or just make a relatively quick set off or pick-up.

Table 2-6 shows the status of the general purpose freight rail yards in Maine.

Table 2-6: Maine General Freight Rail Yards, 2010

Location Name of Yard	General Description	Overall Length of Yard	Number of Functional tracks at present time	Clear Length of Longest tracks	Function
PAN AM RAILWAY					
Mattawamkeag	Small yard where Maine Central connected to Canadian Pacific	5,700'	5	3,200'	Currently is end of Pan Am Railway and interchange with Eastern Maine RR
Bucksport	Small yard stretched out along end of branch at Bucksport	7,300'	14 tracks strung out in several groups over the 7,300' plus a number of tracks into mill	2,000'	Currently supports Verso Bucksport mill. Was some oil traffic in past and copper ore transload.
Bangor (Bucksport connection)	Several tracks at junction of Bucksport & Freight Main. Long track is runaround	3,275'	4 - inc. run-around	2,500'	Long track needed to reverse direction as Bucksport Branch connects in North direction.
Northern Maine Junction	On Pan Am, interchange with MM&A. Long, series of yards, max. of 4 tracks wide.	10,565'	8 tracks	5,700'	Currently regional yard. Supports freight main to Mattawamkeag, Bucksport Br. & local businesses.

Location Name of Yard	General Description	Overall Length of Yard	Number of Functional tracks at present time	Clear Length of Longest tracks	Function
CENTRAL MAINE & QUEBEC					
Searsport	Port side yard plus oil loading tracks and to Mack Point.	3,000'	4 tracks plus various loading tracks beyond and adjacent to main yard.	2,400'	Serves port and nearby chemical plant. Major commodities were coal, then oil. Four tracks removed in main yard.
PAN AM RAILWAY					
Mattawamkeag	Small yard where Maine Central connected to Canadian Pacific	5,700'	5	3,200'	Currently is end of Pan Am Railway and interchange with Eastern Maine RR
Bucksport	Small yard stretched out along end of branch at Bucksport	7,300'	14 tracks strung out in several groups over the 7,300' plus a number of tracks into mill	2,000'	Currently supports Verso Bucksport mill. Was some oil traffic in past and copper ore transload.
Bangor (Bucksport connection)	Several tracks at junction of Bucksport & Freight Main. Long track is runaround	3,275'	4 - inc. runaround	2,500'	Long track needed to reverse direction as Bucksport Branch connects in North direction.
Northern Maine Junction	On Pan Am, interchange with CMQ. Long, series of yards, max. of 4 tracks wide.	10,565'	8 tracks	5,700'	Currently regional yard. Supports freight main to Mattawamkeag, Bucksport Br. & local businesses.
Waterville	Larger yard with system shops, inter-modal facility	5,100' / 7,690'	17 in main yd. + shop	4,200' / 6,200'	System shop, unused I. M facility, supports Sappi & Madison mills, E. Augusta Br & local businesses.
Danville Junction	Small interchange yard with St. Lawrence & Atlantic	3,000'	4 (shared with SLA)	2,150'	Recently reconfigured to improve interchange operations. Several other sidings in area.
Rigby Yard	Large	7800'	13 tracks 2 thru tracks	5200'	Regional classification and switching yard

Location Name of Yard	General Description	Overall Length of Yard	Number of Functional tracks at present time	Clear Length of Longest tracks	Function
PAN AM RAILWAY					
Rumford	Small yard that supports adjacent New Page mill with some cars for Rileys	2,600' / 5,100'	8 in main yd. + 7 - 8	2,100'	Car storage and switching for mill at Rumford and also for mill at Rileys(Jay)
Rileys (Jay)	Long, narrow yard that supports adjacent Verso Androscoggin Mill	7,000'	15-16	2,000'	Long layout of several smaller yards with numerous tracks extending to pulp & paper mill
SAINT LAWRENCE & ATLANTIC					
Lewiston Junction	Three tracks along main line, loco shop and adjacent Port of Auburn tracks	5,500	3 + 6 shorter	5,000'	Long range plans to add several more tracks along main line
Danville Junction	Small interchange yard with Pan Am Railway	3,000'	4 (shared with PAR)	2,150'	Recently reconfigured to improve interchange operations. Several other sidings in area.
South Paris	Two storage tracks along main line plus tracks near center of S. Paris.	1,825'	2	1,410'	Used to store cars and switch cluster of industries in South Paris & south towards Mechanic Falls
MAINE EASTERN					
Rockland	Small yard and round house at Rockland.	1,485'	4	900'	Used mostly to support Dragon Cement plant at Thomaston, passenger excursion, loco servicing.
Brunswick	Interchange track and siding.				

In general terms, the rail customers provide the market force and the railroads follow by offering their best case response to market demand. While the railroad's operating plan is a part of the equation, the real driver in these infrastructure and operational decisions are the rail customers. The challenge to Maine (both to the state and the businesses that may need rail freight service) is that the railroad infrastructure has been downsized, real estate sold off, and new land uses developed around rail yards. Some of these changes resulted from changes in customer demand, and some, perhaps, from lack of investment in infrastructure and equipment. Another key factor, however, is the interstate highway system that allowed for, and even encouraged, the dispersion of freight-generating businesses away from traditional rail served locations to new locations along the interstate highway

In addition to the rail facilities within Maine, the state's shippers rely on freight facilities located outside of Maine to provide effective goods movement within the state. The ports of Halifax and St. John to the east provide marine and/or rail links to service businesses in Maine. The Port of Portsmouth in New Hampshire is a major importer of road salt for the region, and exporter of scrap metals. It is important to note that substantial volumes of products, especially consumer products for retail trade, are delivered to ports in New

Location Name of Facility	General Description	Number and Length of transfer tracks	Number and Length of support tracks	Comments on Operations
MAINE NORTHERN RAILROAD				
Presque Isle Intermodal Facility	Small facility located within airport property	1 at 1,200'	N/A	Intermittent Operation. Handles frozen foods, various mulch material
Truck/Rail Log/Chip Transfer	There are a dozen or more siding locations where logs and chips are transferred between modes	Note 2	Note 2	
PAN AM RAILWAY				
Waterville Intermodal Facility	Two 3,000' ramp (loading) tracks, with 100' between. Created by removing yard tracks	2 at 3,000'	Numerous - see Waterville Yd.	Facility idle for last seven years.
Turners Island, LLC	Bulk cargo, roll on-rolloff loading, 98 acres open storage, 9,000 SF dryware-house			Short line rail way connects to Pan Am at Rigby Yard.
SAINT LAWRENCE & ATLANTIC				
Auburn Intermodal Facility	Small facility, paved with compacted gravel.	2 at 1,200'	1 at 1,700' +tracks nearby	Has been successful in attracting related economic development – trucking and warehousing to the region.
Port of Auburn	Single ended yard for storage plus tracks for ethanol and bunker "C" oil transload	6-8 at 900'–1,100'		Primarily rail car storage and transload of bulk materials.
Savage, Auburn	Extensive rail to truck transload facility for dry and liquid chemicals and food grade products	9-10 tracks from 400' to 1,110' long		This facility has seen steady growth as intermodal services (bulk) have replaced direct rail service for some regions within the state.
MAINE EASTERN				
Rockland Cement Pier	Small facility used to transfer bulk cement from rail car to barge using vacuum system	1 at 350'	N/A	One double ended siding where specialized covered hoppers are vacuum discharged to a barge.

York, New Jersey and Montréal, or delivered to distribution super centers in the Mid-Atlantic states. From there, these products are trucked into the region.

To respond to these market changes, the use of intermodal services has increased leaving the “last mile”⁶ delivery to local trucking firms. This factor is one of the reasons why more than 90 percent of all freight shipments in Maine are moved by truck for at least a part of the journey.

2.3.2 Maine’s Intermodal Facilities

Intermodal rail terminals are locations within a rail network where international and domestic containers or trailers are exchanged between the rail mode and truck mode. The term “Intermodal” in the railroad context refers to containers or trailers on flat cars moving in train service. Intermodal shipments have typically moved by rail between dedicated intermodal terminals. A “dedicated” terminal is one where only intermodal trains stop. In the early 1980’s many railroads discontinued moving intermodal containers in mixed train service due to the variability in service requirements and the extended asset cycle time.

Intermodal train service is usually cost competitive only on movements of more than 500 miles. Since most short line or regional rail carriers do not have that length of haul within their networks, these railroads generally have not participated in intermodal activities. There are several exceptions to the rule and in Maine the SLR has developed several intermodal services in corridors of less than the standard 500 mile minimum.

Intermodal rail to truck transfer facilities in Massachusetts on both CSX and Pan Am Railway (in partnership with Norfolk Southern) handle many products entering and leaving Maine via truck. Rail shipments from southeastern U.S. locations may also be transloaded to truck in the region south of New York City, thus contributing to increasing congestion on highway infrastructure in the region, especially south of Maine. Direct access to intermodal services offered by the Class I railroads featuring more favorable rate structures, transit schedules and access to more origin/destination rail terminals in North America are some of the reasons that Maine businesses use intermodal facilities outside the state.

As detailed in Table 2-7, Maine currently has one active intermodal facility where shipping containers and trailers may be transferred to and from rail cars to trucks. There are also a number of locations where bulk products are transferred from railcars to trucks, or vice-versa. The key facilities are:

- Auburn Intermodal Facility
- Port of Auburn
- Savage-Safe Handling in Auburn
- Truck/Rail Log/Chip Transfer along the CMQR and MNR
- Turner’s Island Intermodal Facility
- Rockland Cement Pier

6 The term “last mile” is not truly literal, as many intermodal movements to or from the rail yard may be 100 or more miles.

Maine also has two other intermodal facilities that are currently inactive:

- Waterville Intermodal Facility
- Presque Isle Intermodal Facility

Table 2-7: Maine Freight Rail to Truck Facilities, 2013

NOTES:

1. Split figures indicate length of main body of yard with larger figure being one or two longer tracks that function as yard leads or a receiving/departure track. Split figures in longest track column indicate longest track in main body of yard and longest track to receive or clear a train.
2. There are many woods sidings where logs are loaded directly to rail cars, several points where chips are transloaded and a number of lumber transloads around the MM&A and MNR. Much of this traffic is captive to MM&A and/or MNR.

Auburn Intermodal Facility

Of the intermodal facilities in Maine, only the Auburn facility has been active during the past several years. Volumes handled at that facility have declined by more than half from 12,000-15,000 loaded containers and trailers per year in the late 1990's to about 4,000-5,000 loads per year in recent years. Opened in 1994, the facility was originally a 35-acre terminal that has since been expanded to over 50 acres. All the expansion is related to increased trailer/container storage.

The Auburn facility consists of two 1,200 foot long tracks that accommodate transfer of containers and trailers between truck and rail. The greater portion of the facility is used for trailer/container parking, containerized storage, and a weighing and freight control center. The cargo is lifted between flat bed rail cars and trucks via a mechanized packer, also known as a side loader. The design capacity of this facility is approximately 48,000 lifts per year.

Four trucking companies serve the Auburn Intermodal facility and these include: Bisson Transport, Manchester Motor Freight, Pacer Cartage Inc. and Roadlink. These companies serve all of New England and provide customer pick up and deliveries to customers throughout the region. This terminal is less than three miles from I-95 and is 140 miles North of Boston. Typical inbound goods that pass through this facility via rail from west coast ports include consumer goods for L.L. Bean in Freeport and wine from California for liquor stores in New Hampshire. The inverse movement of truck to rail consists primarily of trucks arriving with rolls of paper that are shipped westbound to printing operations in the Midwest.

Auburn's intermodal freight moves over the St. Lawrence and Atlantic Railroad into Canada and its connection to Canadian National's transcontinental main line at St. Rosalie, Québec (east of Montréal). That main line runs between Halifax, Nova Scotia and Vancouver and Prince Rupert, British Columbia by way of Montreal, Toronto and other major Canadian cities with connections south into the United States. The double stack vertical clearances, a positive balance of inbound versus outbound loads and its connection to Canadian National's transcontinental intermodal system are reasons why this facility remains viable. The primary issues limiting growth at this terminal appear to be a combination of non-competitive pricing and lack of direct service to multiple, major U.S. destinations to and from Auburn. Both of these factors are influenced by Canadian National.

Savage-Safe Handling

Safe Handling was sold to Savage Services Corporation of Utah effective December 1, 2009. The Safe Handling facility is located in Auburn on the St. Lawrence & Atlantic Railroad and is a major bulk transload operation dealing in industrial chemicals and food grade products such as edible oils, flour and corn syrup. It is also a major toll processing company, mixing and repackaging various products for other companies. The primary facility is located on the east end of the Lewiston/Auburn Branch, which diverges from the St. Lawrence and Atlantic Railroad's main line at Lewiston Junction. There are over a half dozen tracks for transferring various liquid and dry products between rail cars and trucks and also several rail served buildings for the toll processing part of the business. In the last several years additional tracks have been installed on the west end of the branch at Lewiston Junction for both rail car storage and limited transloading. More recently, tracks have been installed to service an ethanol and oil transload facility.

Port of Auburn

The Port of Auburn is served by Saint Lawrence and Atlantic and is comprised of rail facilities around Lewiston Junction in Auburn, including a U.S. Customs station and warehouse space that are all within a foreign trade zone (FTZ). An FTZ allows goods moving to and from the U.S. and foreign countries to enjoy lower tariffs and be exempt from customs fees until sold or moved to other locations in the U.S. If reshipped to a foreign country, tariffs are completely avoided.

Truck/Rail Log/Chip Transfer

The long standing practice of trans-loading forest products from truck to rail has been served by a range of facilities located throughout Maine's "wood basket," served by the Maine Northern Railroad. In many cases these facilities are small yards, but may also be sidings located along the main lines or branch lines. Much of this traffic is intrastate, moving from forest to lumber mills, pulp mills or chippers for local consumption.

Turner's Island Intermodal Facility

Turners Island is a privately owned and operated 14-acre marine-rail cargo terminal located in South Portland, Maine. The facility can handle almost any cargo that can be shipped by either rail or sea (barge). Turners Island short line railway connects with Pan Am Railways in South Portland for shipping destinations nationwide.

Rockland Cement Pier

New England's only portland cement plant in Thomaston ships most of its output via barge from the southern part of the Rockland waterfront and is served by the Maine Eastern Railroad. The cement is moved by rail car the four to five miles to the pier head in special pressure differential rail cars where the cement is transferred to barges via a vacuum system. This shuttle train provides the Maine Eastern Railroad a significant portion of their freight revenue on the state owned Rockland Branch.

Waterville Intermodal Facility

The Waterville Intermodal Facility is served by Pan Am Railways but has not operated in recent years. Historically, the facility moved outbound paper products in trailers and containers, but it lacked inbound commodities. Because of this, bringing in empty trailer and container units for paper loading became cost prohibitive.

The facility consists of two long loading tracks and storage areas, as well as staging room for other facilities. Business conditions have changed since the initial development of this facility and today many paper customers

are loading rail cars for shipment to Massachusetts where product is consumed or reloaded in containers for transportation to other locations. Bisson Trucking, Pacer Cartage Inc. and Roadlink provide local pickup and delivery trucking services.

Presque Isle Intermodal Facility

The intermodal facility was a public-private development, served by Montreal, Maine & Atlantic (now Maine Northern Railway) at Presque Isle. A small facility, it has handled outbound frozen french fries and various mulch materials sporadically. Special moves of equipment related to wind power systems have also been handled, but the facility is currently inactive. The lack of sufficient inbound commodities and the resulting high cost of positioning empty trailers and containers to load outbound products has made service operations unsustainable.

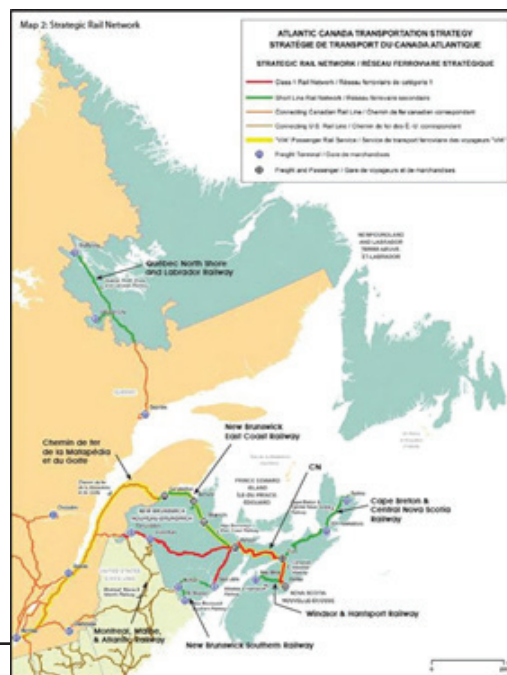
2.4 International, National and Regional Context

2.4.1 International

As shown in Figure 2-4, shippers across Atlantic Canada enjoy a robust rail network to move their products. The long distance to market, high volume of products shipped and low value of these products makes rail the mode of choice. Only two of the four Atlantic Provinces have access to a Class I carrier and this access is limited to one carrier, Canadian National Railway (CN). It provides twice daily double-stack container rail service between the Port of Halifax, the CN intermodal facility in Moncton with connections to Saint John and its major inland terminals in Montreal, Toronto and Chicago. The mainline provides a key rail connection between the Port of Halifax and central Canada/Midwest United States, and is dominated by container traffic to and from Halifax. A major intermodal terminal is located in Moncton, serving various users from New Brunswick, Prince Edward Island and parts of Nova Scotia. There is also a transload facility operating in Edmundston.

Proposed amendments to the rail provisions of the Canada Transportation Act are expected to provide improved shipper recourse to the Canadian Transportation Agency in situations where competition is weak or absent, or when shippers have issues with carriers concerning rates and service. Federal policies in Canada seek to ensure that the interests of rail users are balanced with those of the rail carriers.

Figure 2-4: Canadian Class I Connections to Maine System



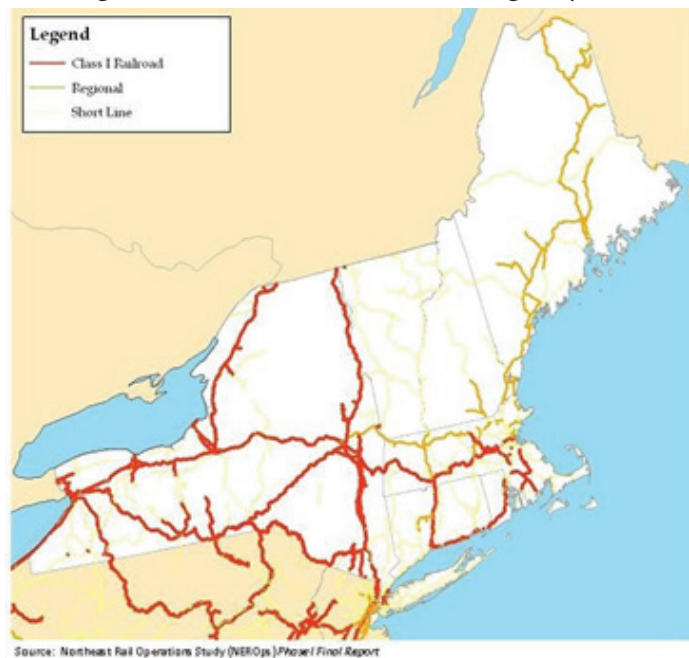
Source: Atlantic Canada Transportation Strategy 2008 – 2018

2.4.2 National and Regional

As illustrated in Figure 2-6, the Northeast Regional Rail Network is made up of the primary Class I freight railroad corridors, with supporting secondary (regional) freight rail corridors, major intercity passenger corridors, and shortline freight and commuter/local passenger service corridors. NS and CSX are the two Class I railroads with the greatest presence in the Northeast. Two Canadian railroads, CN and CP, also have significant presence within the region, and they provide important connections with the region's railroads.⁷ As has been noted, PAR is an important Class II regional railroad which, through the Pan Am Southern agreement, has extended the NS reach into New England.

As was the case in Maine's railroad history, the sale and division of Conrail in 1998 had significant implications throughout the Northeast. This major transaction involved the splitting-up of a system that had been fully integrated over a 20-year period into two parts (NS and CSX) and then reintegrating those parts into two different systems with disparate operating philosophies. This was an enormously complicated operating challenge. The result was serious degradation of service for shipments entering and departing the region on the new NS/CSX rail system, which hindered the ability of rail to compete effectively with other modes. Over time, and with considerable effort by both carriers, this situation was resolved and service improvements were implemented to meet the needs of shippers throughout the region. The northeastern United States, however, continues to be a challenging place for railroads to compete with motor carriers.

Figure 2-5: Northeast U.S. Rail Freight System



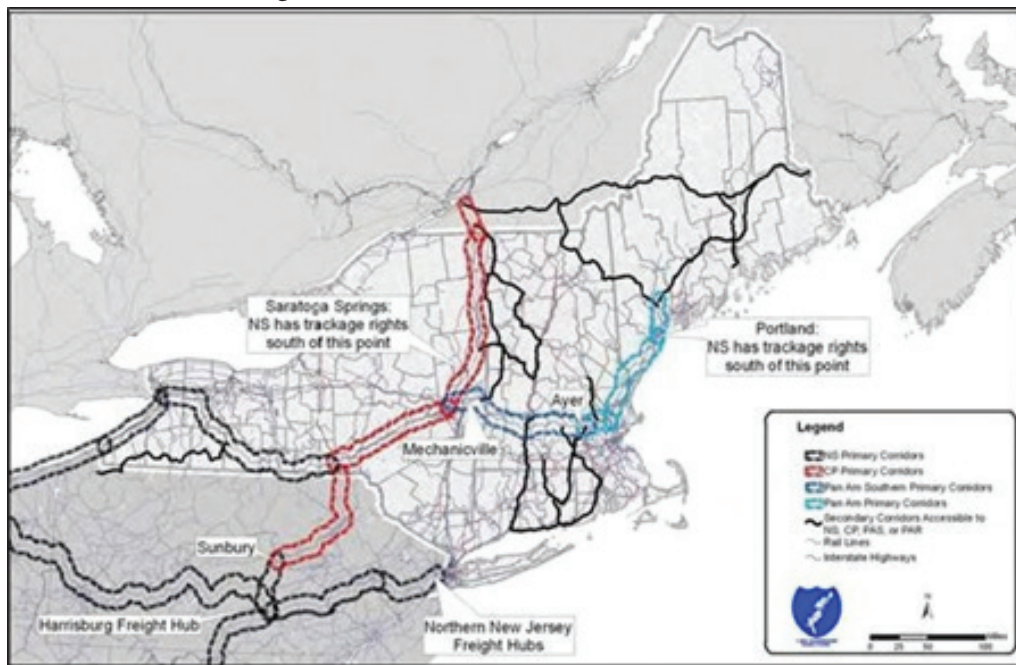
The Northeast region and New England in particular is served by a railroad network that dates back to the earliest days of railroad construction. As such, rail services throughout New England are impacted by vertical clearance restrictions. Low overpasses, tunnels, electrical catenary wires and their supports, and other structures often prevent railroads from providing full double-stack service, impeding their operational efficiency compared to rail

⁷ NS' access to New England is through a trackage rights agreement with the CP between Sunbury, Pennsylvania, and Saratoga Springs and Mechanicville, New York, as well as a connection with the Pan Am Southern, the recently formed NS/Pan Am Railways joint venture, at Mechanicville. NS' trackage rights operations over CP are displayed as being part of NS in the maps provided throughout this report.

service in other regions of the U.S. and Canada.

Massachusetts is served by two main line connections to the national rail network. The northern tier of the state is served by Pan Am, while the central tier is served by CSX. In Connecticut, the New Haven Line runs from New York to New Haven, and the Shore Line East continues along the coast to Rhode Island. Several north-south rail lines connect cities along the Connecticut coastline to the main east-west freight lines in Massachusetts (Figure 2-6).

Figure 2-6: NS, CP, PAS and PAR Corridors



The PAR in Massachusetts is only capable of handling “short” double-stack shipments (i.e., 8.5-foot container on top of a 9.5-foot container, also referred to as “first” generation double-stack or “autorack” height) but not “full” double-stack (two 9’-6” containers), which requires higher clearance.⁸ In cooperation with the State of Massachusetts, CSX has recently achieved full double stack clearance into their newly expanded intermodal facility at Worcester establishing a significant cost savings of containerized goods into and out of the region. In the case of PAR, the clearances allow “short” double stack clearance as far east as Ayer (Devens). The primary obstacle to achieving full double stack clearance to compete with CSX is the 4-¾ mile long Hoosac Tunnel in western Massachusetts.

Southern New England is also served by a consortium of regional and short line railroads that have combined to provide a third alternative clearance route through New York, Vermont, and Massachusetts. The Green Mountain Gateway is a collaborative effort of the Vermont Railway and Providence & Worcester Railroad. This route provides first generation double-stack clearance to the P&W intermodal terminals in Worcester and automotive shipping at Davisville, Rhode Island.

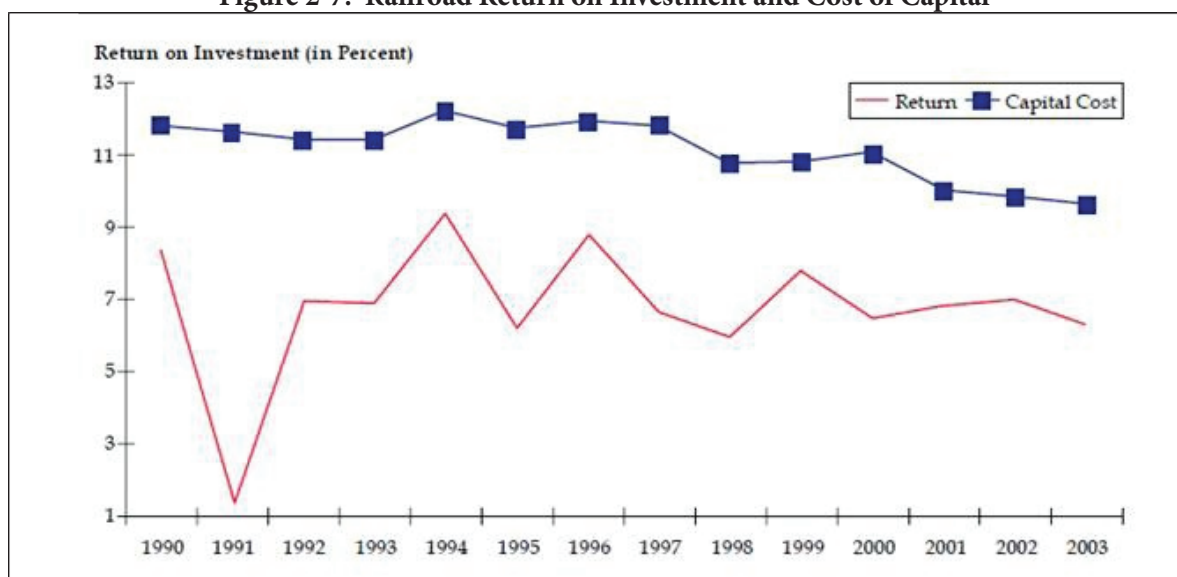
Both main line railroads, as well as the Green Mountain Gateway consortium, initiated their own efforts to improve clearances to and from the region. However, all clearances into Southern New England are still first generation.

⁸ First Generation Double Stack Clearance is 19’ 6”, Second Generation Clearance is 20’ 8”

This situation increases costs and transit time for moving goods via container, and it reduces the inherent benefits of double-stack rail service. Full double-stack clearance into Massachusetts may well have benefits for the entire region, enhancing capacity of the overall system and benefitting shippers and consumers throughout New England. It should be noted, however, that there are full clearance routes to and from Maine via the MM&A-EMRY and the SLR. These routes travel to and from Canada, not the continental United States.

As described in the Northeast Rail Operations (NEROPs) studies, a fundamental problem for the rail industry in the Northeast has been that, despite efforts to improve performance, financial returns have not been adequate to fully justify capital replacement. Based on relatively modest and often declining rail volumes and revenue railroads in the region have not been earning their cost of capital, which is derived from the costs of debt and equity of the railroads. This is a significant challenge for shortline and regional railroads, many of which operate on low-density lines formerly owned by Class I's that had been minimally maintained. Figure 2-7 illustrates railroad ROI based on national rail data; it is important to note the steep dip in the return on investment shown during the 1991 recession. The 2008-2009 economic recession had little impact on that metric which has been increasing since 2004.

Figure 2-7: Railroad Return on Investment and Cost of Capital



Source: AAR

2.5 Freight Rail Issues and System Constraints

Rail and Truck Network Capacity

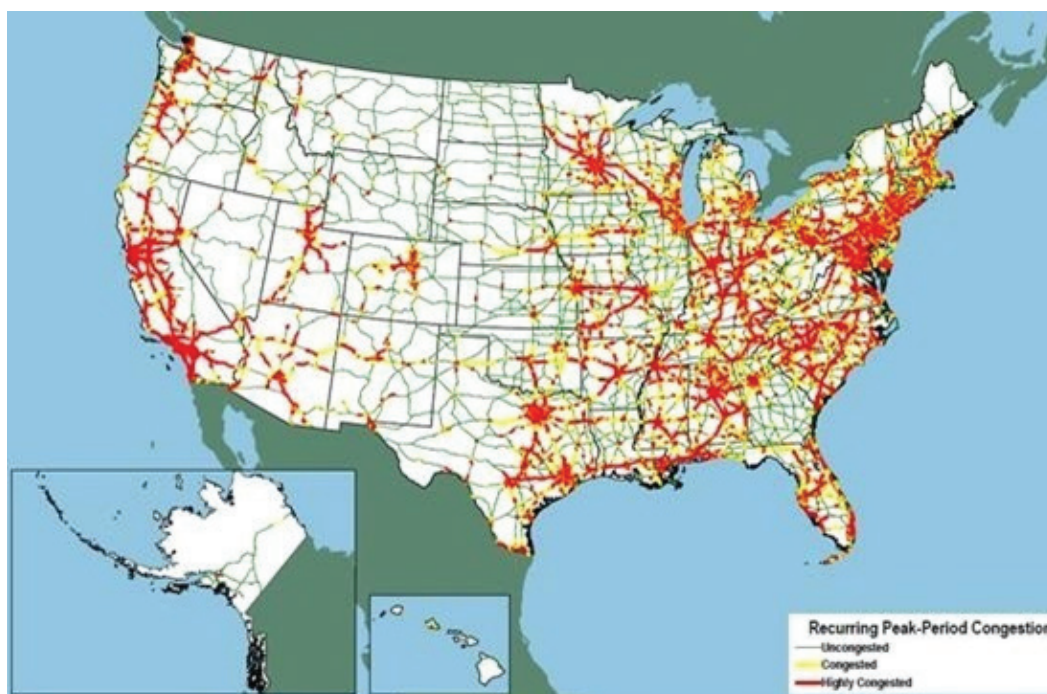
Congestion on the United States highway system has grown substantially in the past several decades and is one of the many reasons that there has been a shift from truck to rail for the transportation of freight. As the primary freight artery for trucks traveling in the Northeastern and Mid-Atlantic regions of the country, Interstate 95 has been particularly afflicted with congestion that shows no sign of abating any time soon.

While traffic on the National Highway System is forecast to result in much of the eastern United States being highly congested during peak travel periods, the freight railroad system will have more than sufficient capacity to keep up with the demands placed on it. Figure 2-9, shows a 2035 forecast of rail traffic projected by the AAR in 2007. When compared to Figure 2-8, there is a stark contrast between highway and rail congestion forecasts along the eastern seaboard of the nation. This region of the country is one of the largest consumer markets and

trade regions of the world. While not all truck traffic moves during the daily peak rush hour periods of travel, having such traffic moving during other periods of time still presents issues that must be dealt with by policy makers. Putting aside the potential congestion caused by increased truck traffic, the wear and tear on our nation's highways will be increased as truck usage of this infrastructure increases. These costs will be borne, regardless of the time of day trucks travel.

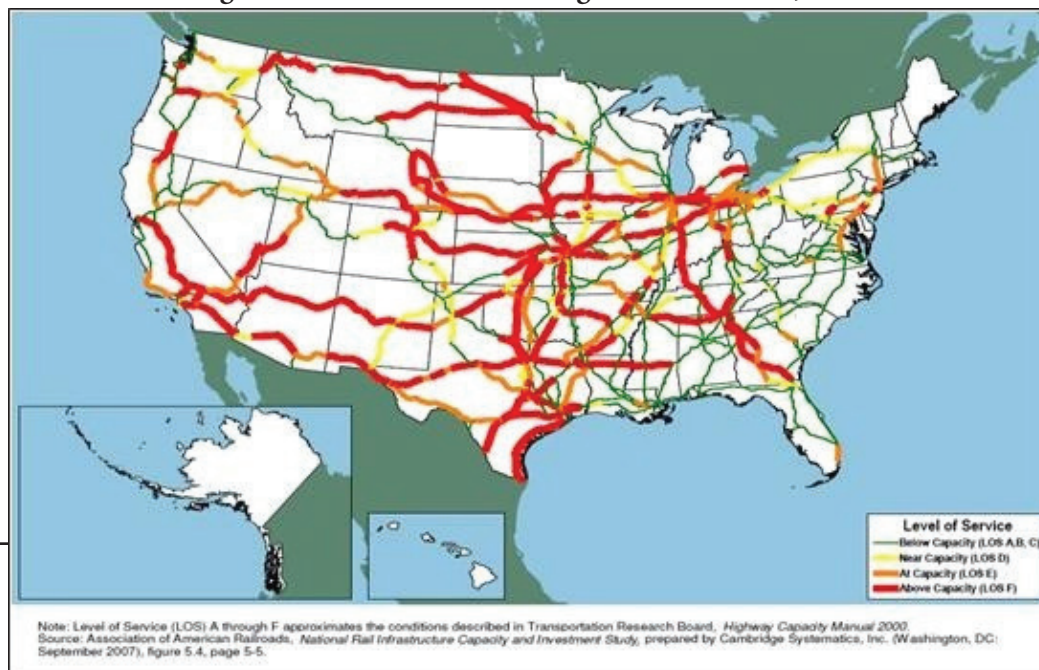
The Federal Highway Administration has predicted that goods movement will nearly double in most parts of the country by 2020 or 2025. This increased demand will contribute to severe congestion and unacceptable levels of service on many of the nation's roadways. The freight rail network is viewed as an appropriate alternative for moving goods and relieving this negative impact on the nation's transportation network.

Figure 2-8: Estimated National Highway System Peak-Period Congestion



Source: USDOT, FHWA, Office of Freight Management and Operations, Freight Analysis Framework, version 2.2, 2007.

Figure 2-9: Estimated Rail Freight Service Levels, 2035



2.5.1 Rail Market Focus

In Maine, the reality that the rail industry is largely dependent on the paper and pulp industry for traffic and revenue has its pros and cons. The cyclical nature of the economy makes it hard to maintain resources needed to undertake projects that may require five to 10 years to achieve return on investment. In the past, Maine's railroads enjoyed strong market share of Maine paper products. That share is decreasing, however, as is demonstrated by the overall low level of carloads handled. In recent years this over dependence on one major industry to support rail freight in Maine was discussed in the public and technical advisory committee meetings, as well as other outreach efforts, throughout development of the MSRP. One issue of debate was related to the availability of suitable rail car equipment to meet shipper needs. Some carriers in the state have a surplus of boxcars that could meet the needs of paper companies. Other carriers have limited ability to secure boxcars in a timely manner. This problem is exacerbated by the deferred maintenance on some routes that results in slow transit time and further discourages shipping by rail. Some states, such as New York and Washington, have invested in the development of rail car fleets to meet the specific needs of in-state shippers. A similar program could be considered to address this serious issue in Maine.

2.5.2 Just In Time Inventory Management

The "Just In Time" concept refers to the practice of ordering only the materials required for short-term production, thereby eliminating warehousing or excess inventory costs. Just in time inventory management was first practiced by Ford Motor Company in its early years of manufacturing and then was widely publicized by the Japanese auto maker Toyota. The management system was then implemented in many other industries in the United States, most notably the paper industry in Maine.

Due to Maine's geographic location, the impact of just in time logistics has been detrimental to the railroad industry in the state. Shipping paper from Maine to points south and west takes longer than shippers and their customers are willing to accept due to the nature of inter-line railroad operations. Moving paper from Maine by rail requires multiple railroad handling operations that often delay shipments. This contributes to increased market share for trucking.

For example, if a customer in Chicago orders paper products from a mill in Maine, it might take anywhere from 10 to 15 days to arrive by rail. Filling the same order via truck would typically take three to five days. The extra costs of trucking, due in no small measure to the truck load being empty on its return to Maine, are recovered by the lower inventory carrying costs of both the shipper and receiver. Thus, this logistics and inventory management system impacts the ability of Maine's railroads to effectively compete in markets they once dominated.

2.5.3 Rail Infrastructure Constraints

Maine's freight railroads are challenged by infrastructure constraints such as allowable weight, vertical clearances, and operational bottlenecks. Many of these issues have multi-state and regional implications and impact both

passenger and freight rail.

Freight shippers are demanding quicker transit time for goods, and delays in transit by rail have forced some shippers to utilize trucks for more outbound movements. Some bottlenecks affecting Maine and New England exist beyond the region, for example, in the busy New York City metropolitan region. These constraints have a detrimental effect on overall system performance, often cascading to other segments of the state's transportation network.

Finding solutions to these problems requires a regional and even national approach to derive the best and most cost effective solution possible. Consider that if the State of Maine joined forces with private railroad owners and operators and upgraded the entire railroad network in Maine to the highest standard of use, this would permit the free flow of rail traffic throughout the state, but problems would continue to be experienced elsewhere in neighboring states and provinces in the region if those networks were not improved as well. The State of Maine and the private railroads would be wasting valuable and limited resources that could be put towards other worthy uses, if such improvements were made in isolation.

2.5.3.1 Rail Line Weight Constraints

Rail lines are rated by allowable weight on rail, and the transition to heavier rail freight cars in North America has been progressing over many years. The current standard of 263,000 lbs. is quickly being replaced by the heavier 286,000 lbs⁹ cars and, in some markets and for some commodities, by cars with gross weight of 315,000 lbs. These rail cars offer more cost effective transport of heavy bulk products, benefiting the shippers and receivers and ultimately, the consumers of products made with the shipped materials. Maine businesses that cannot send or receive these heavier cars may face increasing delays in transit and extra costs for transloading, which may in turn result in such business diverting to trucking in place of rail service.

When discussing rail line weight constraints, it is important to consider that many of the rail bridges in Maine were constructed 50 to 100 years ago. Some of these bridges have fallen victim to the effects of time and nature, while most are holding up relatively well. The fact remains that in order to upgrade rail lines to allow 286,000 pound cars, a significant investment in railroad bridges must be made as well as to the basic track structure because many of the state's rail lines traverse waterways and mountainous terrain and require bridges to maintain connectivity.

The Maine rail network does have several routes approved for 286,000 pound weight on rail. The Eastern Maine Railway and CMQR provide such capacity cutting across the state from New Brunswick to Québec. The MM&A route from Searsport to Brownville Junction may also accommodate this traffic. Pan Am and several other carriers in Maine accept 286,000 pound cars on an exception basis. However, meeting the track and bridge standards for regular use of the heavier cars would require a significant capital investment that is seemingly not available from current operations and revenues.

The State of Maine's interest in this matter is one of maintaining a competitive playing field for Maine based companies, especially for the forest products and pulp and paper industries. As rail freight cars have increased in size and weight capacity, and as shippers take advantage of larger cars, those companies who must rely on older, smaller cars to ship or receive product find themselves disadvantaged in the marketplace. For example, a supplier loads 286,000 pound cars for the vast majority of its customers. If it has to load certain cars to a different (lighter) standard, it must "Load by Exception". To do this, the shipper must either re-tool or readjust its loading pattern

⁹ This 286,000 pound discussion is based on four axle trucks. With the exception of specific heavy haul cars available at premium rates and utilized to move equipment such as transformers and other dimensional or overweight products, all the North American freight car fleet is equipped with four axle trucks. Loads can be moved by exception if six axle rail cars are utilized.

to meet the needs of these few customers and will assess charges accordingly. Cars loaded by exception are also often loaded later than cars for other customers as matter of convenience. In addition, the receiver, in getting lighter cars, must order more railcars to secure the equivalent amount of product. The problem is exacerbated by rail car supply issues, as the larger cars are replacing the older cars. All of these factors combine and could potentially result in Maine companies located on 263,000 pound rated lines facing increased logistics costs making them less competitive.

2.5.3.2 Vertical Clearance Constraints

Another physical condition issue is vertical clearance constraints that are illustrated in Figure 2-11. Vertical clearance is the envelope of space available between the top of rail and the lowest point of an overhead structure of a rail line. Vertical clearance for a rail line is defined as the clearance of the most restrictive structure on a rail line. While significant attention has been paid to the concept of double stack intermodal traffic, and the resultant need to clear the envelope to accommodate that traffic, the issue of vertical clearance extends beyond this one issue.

Figure 2-10: Rail Clearance and Weight Constraints

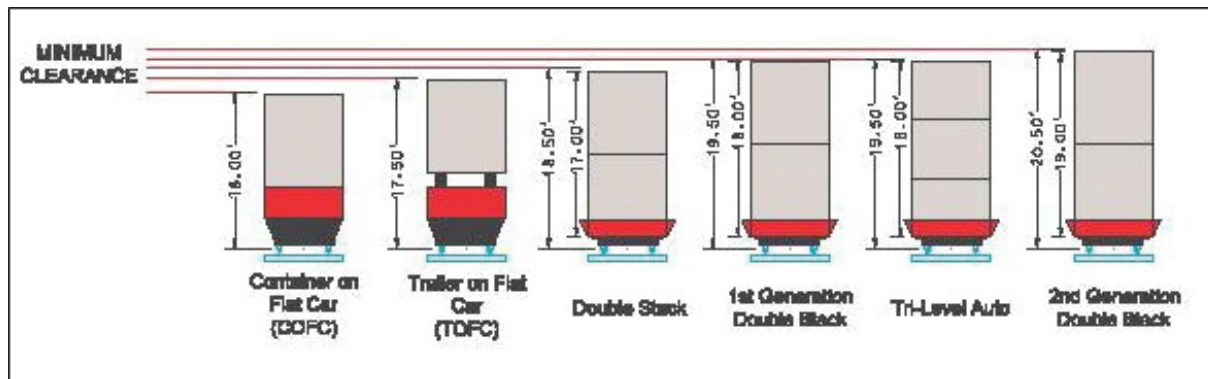


Sixty years ago the majority of rail cars in the U.S. did not exceed 15'6" for AAR "Plate C". Today the use of high railcars has become the norm in the industry, meeting demands by shippers for increased volume per rail car. In fact, all new boxcars are built to either Plate E or Plate F standards (Plate E height is 15'9", and Plate F is 17'0").¹⁰ Tank cars, gondola cars and regular flat cars continue to meet Plate C standards, while most covered hoppers,

¹⁰ AREMA 2007

bulkhead and center-beam flatcars, newer boxcars and automotive and loaded intermodal cars exceed Plate C.

Figure 2-11: Auto Carrier and Intermodal Rail Car Clearance Requirements



Vertical clearance is a major issue affecting the efficiency of freight movement in the Northeast region.¹¹ Figure 2-11 illustrates allowable vertical clearances for various intermodal railcar combinations. By carrying two containers stacked one on top of the other on a single rail car (i.e., “double-stacking”), rail companies can make more efficient use of the space occupied by the railcar. There are several methods of carrying double-stack shipments, including the following:

- “Short” double-stack shipments (i.e., 8’-6” container on top of a 9’-6” container, also referred to as “first-generation” double-stack or “autorack” height in this document), which require 19 feet of clearance, including a one-foot safety margin; and,
- “Full” double-stack (two 9’-6” containers), which is the current international standard for modern double-stack container movement, utilizing two full-size shipping containers.

While attaining rail car clearance may be important for specific customers along certain corridors, keeping the overall rail network in Maine to current rail car standards is a complex endeavor. Several railroads have invested private funds to secure clearance envelopes to support existing or anticipated traffic. As a result of these various investments, traffic has realigned over time. For example, the CMQR has double stack clearance to and from Searsport to Montréal, Canada. However, the Searsport facility itself requires further investment to maximize opportunities of a growing container market. The SLR also has double stack clearance on its route from Auburn to Montréal and beyond reaching the port of Vancouver, Canada. Double stack containers move via the SLR to and from Canada and its connection to CN’s transcontinental main line at St. Rosalie, Quebec (east of Montréal). That main line runs between Halifax, Nova Scotia and Vancouver and Prince Rupert, British Columbia by way of Montreal, Toronto and other major Canadian cities, with connections south into the United States via Chicago and other points in the Midwest region.

The Auburn Intermodal terminal has successfully achieved a balance of inbound versus outbound loads and these factors, as well as its connection to CN’s transcontinental intermodal system, are reasons why this facility has enjoyed some success. The primary issues limiting growth at this terminal appear to be a combination of non-competitive pricing and lack of direct service to multiple, major U.S. destinations to and from Auburn. Both of these factors are controlled by CN, but the two double stack rail routes in Maine provide an excellent opportunity for moving a high volume of goods to and from the state in a cost effective manner.

¹¹ I-95 Corridor Coalition, Northeast Rail Operations Study (NEROPS)

2.5.4 Shared Freight and Passenger Rail Use

As noted in the NEROPs Phase I study, freight and passenger railroads share infrastructure in many parts of the United States. This is particularly true in the Northeast region, which is home to many major urban areas, commuter rail systems, and intercity passenger movements. The downsizing of the rail system in the region has concentrated both passenger and freight operations on several main corridors.

Diminished capacity along certain corridors, particularly those that went from double- or triple-track to single-track operations, has hindered the ability of passenger and freight trains to share infrastructure effectively. Efficient management of shared lines requires a delicate balance of effective communications and dispatching, adherence to curfews and delivery windows, and close coordination between passenger and freight railroads. When infrastructure constraints disrupt this balance, the performance of all system users is affected.

An example of a shared use operation in Maine is along the Pan Am owned route from Portland and recently from Brunswick to the Massachusetts-New Hampshire border over which the Amtrak Downeaster service operates. This service arrangement has been beneficial to both parties. Improvements made to the corridor infrastructure have been accomplished with federal grant funds, and these improvements have resulted in the line travel speed upgrades for both passenger and freight rail service.

2.5.5 Capital Needs

Nationally the U.S. railroad industry has greatly improved its financial and physical condition since the deregulation of the industry by the Staggers Rail Account. Railroads in the United States carry more tonnage than ever before, over fewer route miles, with less fuel and fewer employees than in the past. Railroad industry indices suggest that this transportation mode will continue to grow and to help to maintain the American economy.

The reality in the State of Maine, however, is that reduced volumes of shipments to and from the state have put the railroads in a situation where there is less capital to reinvest in track and equipment maintenance and upgrades. This has resulted in reduced levels of service. This situation exacerbates the already strained relationship between the railroads and shippers and threatens to divert more freight away from rail and towards trucking.

It is critical to Maine's economic wellbeing that the railroad network accommodates existing traffic safely and efficiently. The ability to maintain the existing infrastructure to a state of good repair is a challenge for the region's railroads. Many of these rail lines suffered from decades of deferred maintenance before being spun-off by their previous owners. The present owners lack the financial resources yet are forced to play "catch-up" to bring the railroad back to a state of good repair. Unfortunately, many of these companies find it difficult to catch up as their capital resources are expended addressing day to day operations and emergency repairs.

The Maine Legislature has recognized this situation and has provided funding resources to MaineDOT to assist railroads in overcoming these challenges. Maine rail funding programs for freight operations have been limited in scope, but not in impact. The Industrial Rail Access Program (IRAP) has provided incentives for shippers to use rail more frequently and to reduce the overall investment needed to develop facilities to accommodate shipments by rail. Through the Public-Private Partnership approach - in which all involved parties contribute to the project - IRAP fully engages the railroads, the shippers and the state. These efforts have produced improved conditions for both the railroads and the shippers.

In spite of these efforts, there remain many segments of the rail system stuck in the cycle of deferred maintenance. Track conditions vary with the operational requirements of each rail line and range from "Excepted" track, with a 10 mph speed limit and prohibitions against movement of hazardous materials and passengers, to Class 4 track,

with a maximum allowable speed of 79 mph.¹² In general, track conditions were found to be adequate for current operations but additional investments would be required to accommodate increases in future traffic levels, weight and clearance restrictions previously discussed.

The lack of private capital to invest in these routes results from economic decisions made throughout the national and world economies. Yet, they have a direct impact on the State of Maine. As rail service declines and shippers divert to trucks, the state faces increasing burdens and costs associated with the maintenance and operation of the public highway system. Furthermore, communities are burdened with increased volumes of truck traffic traveling on roadways that may be reaching their design capacity limit. Some shippers cannot take on the added cost of trucking their goods, so they may opt to reduce operations or relocate to a rail served location out of state. All of these actions impact the state's economic wellbeing.

2.5.6 Approaches to Modal Diversion

Investment in freight rail infrastructure improves efficiency and reliability throughout the transportation system. Generally this investment is financed by private railroad companies with revenue generated from freight operations. In Maine, the reduced level of freight traffic has resulted in lower levels of investment in the rail network, leading to decreased levels of service and reliability. Concurrently, there is a groundswell of public demand to divert heavy truck traffic from the public roadways and make better use of the railroad network.

There is increased recognition that public investments in freight railroads may produce public benefits that are quite different from the market based decisions of the railroad companies. Today, Maine is about 85 percent truck-dependent for moving commercial freight. This modal dominance impacts the state and its residents through increased costs for highway construction and maintenance; higher costs to transport some goods; reduced market opportunities for Maine based companies; growing roadway congestion in some regions; and increased use of fossil fuels and resultant air quality issues. Public officials and the general public have urged that more heavy freight be handled by rail and water transportation.

Recent reports, studies and plans have recommended modal diversion as one solution to addressing the multiple problems of growing highway congestion, fuel consumption and air pollution, as well as an economic development tool. By encouraging the use of IRAP and FRIP funding programs, MaineDOT has been proactive in efforts to encourage the use of rail for goods movement in the state. These programs are more fully discussed in Chapter 8, but have been effective in encouraging public-private partnerships that engage both shippers and the railroads.

It must be recognized, however, that freight movement decisions may be far removed from Maine and are driven by cost, schedule and supply chain management principles.

Modal conversion is dependent upon some basic metrics. For traditional container or trailer on flatcar "intermodal service," the following decision rules are initial considerations for mode conversion.

- There must be a supply of empty equipment available to load. Class 1 railroads have encouraged private investment in rail containers. This has led to a large pool of privately owned equipment, which often has route and carrier restrictions associated with it. International ocean transportation companies also limit where their international containers may be used.
- Length of haul is another important consideration. Due to the nature of intermodal service and the high cost of terminal handling operations, eastern railroads feel that the minimum profitable length of haul is 500 miles or more. This often precludes local shipments. Cargo that moves less than 500 miles is often handled faster

¹² Although FRA track classifications set maximum speed limits, the Downeaster Corridor is limited to 79 mph, and generally travels at less than this speed. In fact, the average velocity of the Downeaster in 2008 was 48 mph, but this includes start and stops.

and more cheaply by trucks.

- Out of route considerations must be factored in when the “shipper” and “receiver” have to move cargo to terminals which might not be ‘en route’ of the shipping lane. If the highway miles are shorter than the combined drayage,¹³ rail and drayage miles, then the cost of rail shipment might not be less expensive than a direct truck shipment.
- Drayage as a percentage of total trip miles is a consideration when the length of haul is short, and drayage cost per mile is proportionally much higher than rail cost per mile. For an intermodal movement to be competitive with over the road trucking, drayage miles as a percent of total shipment miles must be less than 20 percent of the total trip. This effectively reduces the competitive reach of each intermodal rail terminal to 150 miles or less. The average drayage move is about 30 miles.

Mode conversion can also include truck load to rail car diversion. This type of mode conversion involves a transload facility. Transload facilities provide users not directly served by rail access to the rail network. In addition, transload terminal operators often provide Foreign Trade Zone (FTZ) services, short term storage and warehousing, and customization services. Benefits of transload services include:

- On-site rail customer service expert to arrange for rail car ordering, loading and shipment tracking.
- Low cost transportation services, if freight is not time sensitive.
- Customization and special services to meet local shipper/receiver just-in-time freight needs.
- Shipment consolidation or deconsolidation services. This allows multiple shippers to take advantage or “share” rail cars moving between the same markets.
- Specialization in all types and varieties of products, which may include lumber, logs, steel or scrap or other raw materials, agricultural products such as grain or bulk commodities, paper and food products can also benefit from load consolidation.

Benefits of Freight Rail Transportation

REDUCES ENERGY USAGE AND AIR QUALITY IMPACTS.¹⁴

- A freight train can move a ton of freight an average of 436 miles on a single gallon of fuel.
- That’s close to four times as far as it could move by truck.
- A single freight train can take the load of 280 trucks off the road.¹⁵
- That’s like removing 1,100 cars from the road.
- Each ton-mile of freight moved by rail rather than highway reduces greenhouse gas emissions by two-thirds or more.
- Freight trains are three or more times more fuel-efficient than trucks.
- If only 10 percent of freight currently moved by highway switched to rail, national fuel savings would exceed one billion gallons of fuel a year and greenhouse gas emissions would fall by 12 million tons.
- By improving their fuel efficiency, freight railroads have, on average, reduced their greenhouse gas emissions by 20 million tons every year since 1980.

SAFELY TRANSPORTS GOODS¹⁶

- 2008 was the safest year ever for U.S. railroads. From 1980 to 2008, the train accident rate fell 72 percent, the

13 Drayage is defined as, a. the act of transporting something a short distance by lorry or other vehicle and b. the charge made for such a transport. In intermodal terms it is the movement by truck of the container or trailer to or from the rail intermodal terminal.

14 Association of American Railroads, <http://www.aar.org/InCongress/Energy%20and%20Environment/Energy%20and%20Environment.aspx> December 29, 2009

15 In fact, a recent Federal Railroad Administration report reports that for all movements, rail fuel efficiency is higher than truck fuel efficiency in terms of ton-miles per gallon. The ratio between rail and truck fuel efficiency indicates how much more fuel efficient rail is in comparison to trucks. Rail fuel efficiency varies from 156 to 512 ton-miles per gallon, truck fuel efficiency ranges from 68 to 133 ton-miles per gallon, and rail-truck fuel efficiency ratios range from 1.9 to 5.5. See Comparative Evaluation of Rail and Truck Fuel Efficiency on competitive Corridors , November 19, 2009

16 Association of American Railroads, “Railroads, Moving America Safely”, December 2009

CHAPTER 3 | *Passenger Rail System*

Overview

Passenger rail service in the State of Maine offers residents and the region's travelers safe, reliable, and energy efficient transportation. Passenger rail transportation slows the growth of roadway congestion, provides for redundancy in the transportation system, and is a less air polluting transportation alternative compared to many other modes of transportation.¹ Public transportation in the United States has experienced a strong resurgence of interest and utilization in recent years. Nationally, from 1995 through 2008, public transportation ridership increased by 38 percent - a growth rate higher than the 14 percent increase in U.S. population and higher than the 21 percent growth in the use of the nation's highways over the same period. In 2008, Americans took 10.7 billion trips on public transportation.²

The purpose of this passenger rail system chapter of the Maine State Rail Plan is to provide a brief history of passenger rail services in Maine, an overview of the existing service in operation, important industry trends, and potential improvement/ expansion projects under consideration.

Passenger rail, including intercity and commuter rail, is viewed by many citizens of Maine as an important component of a multi-modal transportation system. Tourist and excursion train services also play a role in meeting transportation needs related to tourism and recreation. High Speed rail is part of the national transportation agenda, and that initiative may well have implications to Maine's passenger rail system development. A review of various railroad transit technologies is provided in Appendix J for reference.

Maine's Vision for Passenger Rail

The passenger rail system for Maine should be safe, reliable, convenient and effectively connected to other modes of transportation. The system should connect Maine's communities, and provide for connections to other states and provinces. The system must also include safe, comfortable and attractive stations that enhance communities and lead to appropriate and sustainable development.

Current Conditions

The Amtrak Downeaster provides five round-trips daily between Portland and Boston, with two round trips extending to Freeport and Brunswick. There are no additional public rail services in Maine, although there are railroad corridors that have been examined for potential use in the future. Some of these routes are in active use for freight rail operations, while others are inactive lines, some of which are owned by the State of Maine.

3.1 Brief History of Passenger Rail in Maine

Between 1842 and 1967 Portland, Maine's largest city, was continually served by passenger rail services. While Portland's freight railroad activity revolved around goods to be exported to and imported from Europe, passenger activities were focused on intercity travel from Portland to Boston, Nova Scotia, Montréal, and points west.

Historically, train schedules were designed for intercity travel rather than daily commuting. Portland once boasted four passenger rail stations: Commercial Street and India Street (both on the water front), Preble Street on the north side, and Union Station to the west.

¹ APTA, Public transportation produces 95 percent less carbon monoxide (CO), 90 percent less in volatile organic compounds (VOCs), and about half as much carbon dioxide (CO₂) and nitrogen oxide (NO_x), per passenger mile, as private vehicles.

² APTA, "Public Transportation: Fact At A Glance", 2008.

In December 2001, intercity passenger rail service returned to Maine with commencement of the Downeaster service. The National Railroad Passenger Corporation (Amtrak) operates this service. The Downeaster makes five round-trips daily between Portland and Boston, Massachusetts, a distance of 116 rail miles, serving 10 station communities in between. Beginning on November 1, 2012, two daily round trips were extended 30 miles north to include the communities of Freeport and Brunswick, Maine. The Downeaster was established by, and is under the management of, the Northern New England Passenger Rail Authority (NNEPRA) which was established in 1995 by an act of the Maine Legislature.

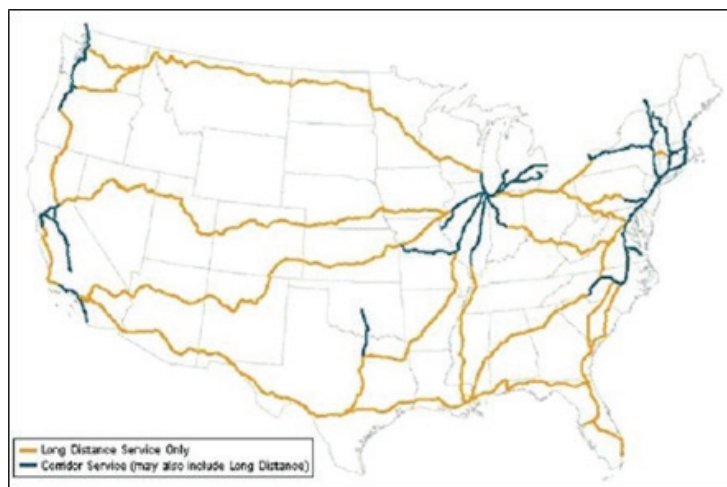
3.2 Intercity Passenger Rail

Intercity passenger rail refers to rail passenger services connecting cities 100 miles or more apart. In the U.S., top speeds may range from 79 mph to approximately 110 mph. It generally operates on track shared with freight trains, commuter rail or both. The exception to this definition is the Amtrak Northeast Corridor. The Acela regional/Acela Express services operate between Boston, New York, Philadelphia, and Washington, D.C. Amtrak operates the service on its own right-of-way at top speeds of 125 mph to 150 mph. This corridor is the heaviest used in the Amtrak system and is shared with both freight and commuter rail operations.

Amtrak was established by Congress by the Rail Passenger Service Act of 1970. Prior to that, private railroads were required to carry passengers as a national service. The railroads successfully argued that this requirement interfered with their freight business. Amtrak was established to relieve the private railroads of their obligation to provide passenger service, and it was granted access to the freight rail lines networks. Services commenced in May of 1971.

Today, Amtrak operates its intercity trains over 21,000 route miles serving more than 500 communities in 46 states. Seventy-one percent of the miles traveled by Amtrak trains are on tracks owned by other railroads. Amtrak and its eighteen state partners contract for the operation of regional and corridor train services that complement the national long distance services. Figure 3-1 illustrates Amtrak's passenger service in the continental United States.

Figure 3-1: Amtrak's Rail Network

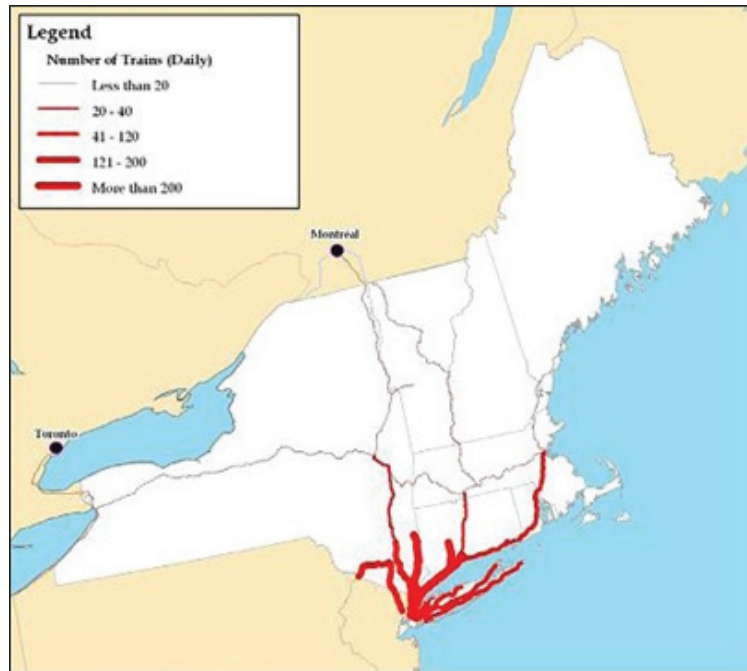


Source: www.amtrak.com

Amtrak carried 31.2 million passengers in Fiscal Year (FY) 2012,³ with 48 percent of riders travelling on State supported or short distance trains. Thirty-six percent of riders travelled on Amtrak's Northeast Corridor ("NEC"), the busiest railroad route in North America, with more than 2,600 trains operating over some portion of the Boston-Washington route daily.

Figure 3-2 shows the combined intercity and commuter rail daily volume of trains in the Northeast.

Figure 3-2: Intercity and Commuter Rail Volume



Source: Cambridge Systematics, *Northeast Rail Operation Study, Phases I Final Report*

3.2.1 The Downeaster Service

Passenger rail service returned to northern New England when the Downeaster began service in December 2001 after more than ten years of planning by advocacy groups, the State of Maine, Amtrak, and the Federal Transit Administration (FTA). Under terms of a 20-year operating agreement with NNEPRA, Amtrak operates five daily round-trip trains. All five of those trains travel along a 116-mile corridor over tracks owned by Pan Am Railways (80 miles) and the Massachusetts Bay Transportation Authority (MBTA) (36 miles). Two round-trips each day travel an additional 30 miles (29 on Pan Am territory and one mile on the State-owned Lower Road) to Freeport and Brunswick, Maine. More than \$60 million of federal, state and local funds were invested in building and renovating stations and upgrading track and signal systems along the Downeaster corridor to begin service. Seven million additional dollars have been invested in this critical rail line to reduce travel time, increase frequency and improve reliability, and \$38.2 million was recently invested to expand service to Freeport and Brunswick.

The Downeaster's travel time between Portland and Boston's North Station is 2-hours and 25-minutes, and include station stops at eight intermediate stations. This is a reduction from the original schedule of 2-hours and 45-minutes. That trip time reduction and the addition of a fifth round-trip resulted in a 32 percent increase in ridership over the prior year. The scheduled travel time between Portland and Brunswick is 55 minutes, which

³ Amtrak maintains its records on a federal fiscal year basis – October 1 through September 30.

includes time to reverse direction into and out of Portland Station. Amtrak provides the train crews to operate each daily round-trip, and a total of three Amtrak ticket agents staff the Portland Station. The service is operated with three train sets. Each train set usually consists of a locomotive, a café car with business class seating, a non-powered control unit and three or four passenger coaches, depending on the trip and demand, with total passenger seating capacity of up to 302 passengers. Additional coaches are added to increase capacity during peak travel periods. The Downeaster Café, managed by Epicurean Feast under contract to NNEPRA, serves light meals, snacks and beverages including a number of Maine-made products.

The Downeaster operates on more than 100 miles of track infrastructure owned by Pan Am Railways (PAR) between Brunswick and Plaistow, NH and 36 miles of track infrastructure owned by the Massachusetts Bay Transportation Authority (MBTA) between Plaistow, NH and Boston North Station. The entire route was rehabilitated to Class 3 and 4 standards⁴ in 2000, and NNEPRA partners with both railroads to support ongoing annual maintenance and capital improvement programs to preserve and improve the track conditions in the corridor, maintaining schedule reliability that is critical to sustaining customer satisfaction and achieving performance goals.

In addition to reductions in travel time, increases in frequency and expanded station communities, effective marketing and promotional campaigns have helped make the Downeaster one of the fastest growing passenger rail services in the country. NNEPRA actively promotes the Downeaster through a variety of creative campaigns targeted at corporate travelers, senior citizens, tourists, students, commuters and sports fans to fill seats in peak and off-peak travel times.

NNEPRA also maintains an effective partnership with regional bus carriers and offers. NNEPRA also helps sponsor the Train Host Program coordinated by TrainRiders Northeast (TNE). These volunteer hosts provide information and assistance to passengers on Downeaster trains and at stations.

Figure 3-3: Amtrak Downeaster Stations



Stations

⁴ The Federal Railroad Administration classifies railroad tracks from Class 1 to 6. Class 3 and 4 track provides for passenger rail operations up to 79 miles per hour.

The Downeaster serves twelve stations in three states. Six stations are located in Maine (Brunswick, Freeport, Portland, Old Orchard Beach, Saco, and Wells), three stations are located in New Hampshire (Dover, Durham-UNH and Exeter), and three are located in Massachusetts (Haverhill, Woburn and Boston North Station).

BRUNSWICK STATION

Brunswick Station is located at the newly built Brunswick Station development complex located within walking distance of the downtown and Bowdoin College. The complex includes a visitors' center, several restaurants, commercial businesses, medical center and a hotel. The Station and Visitors' Center, which is staffed by the Brunswick Downtown Association under contract to the Town of Brunswick, is a multi-modal station which houses a Downeaster Quik Trak machine and is served by Concord Coach Lines coastal route service between Bangor and Portland, the Brunswick Explorer local bus service, Maine Eastern Railroad, a seasonal rail excursion train service between Brunswick and Rockland, and Enterprise Rental Car.

FREEPORT STATION

The Freeport Station is located at the Freeport Visitors' Center "hose tower building" adjacent to the train platform and in the heart of downtown Freeport. The Station is staffed by a combination of paid and volunteer hosts supported by the Town of Freeport and features a small waiting area, local travel information and a Quik Trak machine. The Station is within walking distance to dozens of stores (including L.L. Bean), hotels, and restaurants. Hotel shuttles and taxis meet the train daily.

PORTLAND TRANSPORTATION CENTER (PTC)

The PTC is located just west of downtown Portland, Maine and is the only Downeaster station staffed with Amtrak ticket agents. The PTC is owned by Concord Coach Lines; NNEPRA leases space for ticketing and passenger services. Revenue from the adjacent parking lot, owned by MaineDOT and subleased to NNEPRA, is used to offset most of the operating costs of the PTC.

The PTC is a multi-modal station served by the Concord Coach Lines and the Metro Bus system. Concord Coach Lines offers several trips a day between Portland and Boston South Station/Logan Airport, as well as service to and from Bangor and the Maine Coastal region. Metro Bus provides bus service to destinations through greater Portland and three surrounding communities. Downeaster passengers can obtain a free Metro ticket from the Downeaster Cafe. Taxis also are available at the PTC, and fares to downtown Portland are typically about \$12. When arranged in advance, car rental companies will pick up passengers at the station. Several area hotels provide shuttle services for guests. A bike share pilot program at the PTC was launched by NNEPRA in the summer of 2013.

Portland Transportation Center



Source: www.trainweb.org website, November 30, 2009

Old Orchard Beach, ME

Old Orchard beach is a seasonal stop for the Downeaster, served April through October of each year. The covered platform is steps from the beach, amusements and pier. The Town of Old Orchard Beach is responsible for maintaining the platform, while the Chamber of Commerce provides passenger assistance.

Saco, ME

The Saco Transportation Center is located in downtown Saco, within walking distance to area shops and restaurants. The new, environmentally friendly station was built by the City of Saco in 2009 and also houses the Biddeford-Saco Chamber of Commerce. Transit connections to Old Orchard Beach, the University of New England and other destinations are provided by both the Shuttlebus and Noreaster bus services.

Wells, ME

The Wells Regional Transportation Center is located at Exit 19 of the Maine Turnpike (I-95). The station, built by the Maine Turnpike Authority, is managed by the Town of Wells and staffed with part-time and volunteer transportation assistants. The Shoreline Explorer provides limited year-round transportation connections from the station to Maine's coastal beach communities with expanded service during the summer months.

Dover, NH

The Dover Train Station is located in the heart of the downtown, within walking distance to the business district and the Children's Museum of New Hampshire. The station is owned and operated by the City of Dover in cooperation with volunteer hosts provided by TrainRiders Northeast. The station is served by COAST bus service.

Durham-UNH, NH

The Durham station is located on the campus of the University of New Hampshire (UNH) and is owned and managed by the University. The adjacent Dairy Bar Restaurant houses the Quik Trak machine. The station is served by Wildcat and C&J bus services as well as Zip Car.

Exeter, NH

The Exeter train platform is approximately one half-mile from downtown Exeter. The Town of Exeter owns and maintains the platform and has obtained funds to build a permanent station. The Quik Trak machine is currently located in the adjacent Gerry's Variety Store. Transit connections are provided by COAST Bus.

Haverhill, MA

The Haverhill Station is located in the city's historic downtown Railroad Square neighborhood. This station is served by the regional transit authority bus system, and the area is home to a variety of restaurants, shops and art studios. The station is owned and operated by the MBTA which also provides commuter rail service to that location.

Woburn, MA

The Anderson Regional Transportation Center is owned and operated by MassPort and is served by the MBTA commuter rail service and the Logan Express bus service to Logan Airport. Located just minutes from I-93 and I-95 this regional transit facility offers extensive parking and a modern station.

Boston North Station, MA

Boston's North Station is located in the heart of the city and on the ground floor of the TD Garden, home to the Boston Celtics and Boston Bruins. It is the terminal station of the MBTA north side commuter network, and provides connections to subways and local bus services. The Downeaster feeds Amtrak's⁵ Northeast Corridor service via a subway connection or transfer by taxi between North Station and NEC services at Back Bay or South Station. NNEPRA contracts with MBTA to provide Downeaster ticket agents at North Station in addition to a Quik Trak machine.

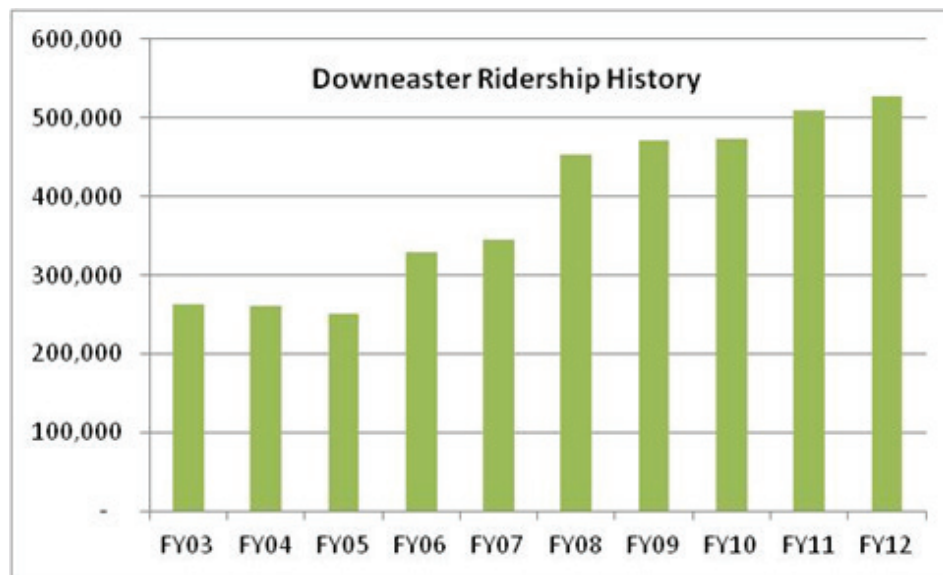
Ridership

The Downeaster has experienced strong public popularity, as evidenced by its ridership growth, which has increased considerably since inception. Ridership in FY2002 was 291,794 increasing to 556,347 in FY2013. Approximately 58 percent of riders travel to or from Maine, with Boston being the most popular destination. Approximately one-third of passengers travel on a multi-ride pass and more than half travel to and from their destination within a day.⁶ Figure 3-4 illustrates the annual ridership data.

⁵ Amtrak reports its data based on federal fiscal year (October 1 – September 30).

⁶ Environmental Assessment for the Downeaster Portland North Expansion Project, prepared by the Federal Railroad Administration and the Northern New England Passenger Rail Authority.

Figure 3-4: Downeaster Ridership FY2003 through FY2013



Source: Northern New England Passenger Rail Authority

The Downeaster performs well financially. Revenues in 2002 were \$4.3 million increasing to \$7.4 million in FY2013. NNEPRA's budget reflects a farebox recovery ratio of approximately 55 percent.

Schedule, travel time and reliability have a direct impact on ridership, as demonstrated by the ridership increase which occurred following a 15 minute trip time improvement in 2005. Ridership jumped again following a \$6 million investment in 2006 which resulted in the addition of a fifth round-trip and a second peak hour departure from Boston. Continual investment in the corridor is an essential ingredient to maintaining and growing the customer base. Ongoing challenges include time competitiveness with other modes of transportation and frequency of trips.


The Downeaster's riders are predominantly Boston bound, although marketing campaigns promoting the "Train to Maine" support Maine's long-term vision of car free tourism. In FY2012, the Downeaster transported approximately 70,000 tourists to Maine, an increase of six percent over the previous year. That number increased significantly to 100,000 in FY2013, as a result, in part, of expanded service to Freeport and Brunswick.

Challenges to successful development of this market are travel time, service frequency and station convenience and amenities. NNEPRA has developed, cooperatively with its railroad partners (Pan Am, MBTA and Amtrak), a corridor service plan that will address the physical constraints within the corridor to improve travel times and reliability. Ongoing cooperative efforts among the states are underway to seek funding to support the operation of faster and more frequent trains. Planned infrastructure improvements in the corridor, once implemented, are projected to result in tens of thousands of additional passengers and millions of dollars in new revenues.

Schedule

Figure 3-5 illustrates the schedule for the Amtrak Downeaster effective April 1, 2013. The Downeaster maintained on-time performance of 75 percent from July 2012 – June 2013.

Figure 3-5: Amtrak Downeaster Schedule - April 2013

DRAFT SCHEDULE												
EFFECTIVE APRIL 1, 2013												
												
SOUTHBOUND	WEEKDAY SCHEDULE						WEEKEND SCHEDULE					
TRAIN NUMBER	680	682	684	686	688	676	690	692	694	696	698	678
DAYS OPERATING	M-F	M-F	M-F	M-F	M-F	M-F	Sat-Sun	Sat-Sun	Sat-Sun	Sat-Sun	Sat-Sun	Sat-Sun
DEPARTS												
Brunswick, ME		7:05 a			7:00 p	8:30 p		7:05 a			5:55 p	9:10 p
Freeport, ME		7:20 a			7:15 p	F 8:45 p		7:20 a			6:10 p	F 9:25 p
Portland, ME	5:25 a	8:00 a	12:45 p	2:35 p	7:55 p	9:20 p	5:35 a	8:00 a	1:20 p	3:45 p	6:50 p	9:55 p
Old Orchard Beach, ME	5:38 a	8:13 a	12:58 p	2:48 p	8:08 p		5:48 a	8:13 a	1:33 p	3:58 p	7:03 p	
Saco, ME	5:45 a	8:20 a	1:05 p	2:55 p	8:15 p		5:55 a	8:20 a	1:42 p	4:05 p	7:12 p	
Wells, ME	6:01 a	8:36 a	1:25 p	3:11 p	8:31 p		6:11 a	8:36 a	1:58 p	4:27 p	7:32 p	
Dover, NH	6:21 a	8:56 a	1:43 p	3:30 p	8:51 p		6:31 a	8:56 a	2:18 p	4:47 p	7:52 p	
Durham-UNH, NH	6:28 a	9:03 a	1:50 p	3:37 p	8:58 p		6:38 a	9:03 a	2:25 p	4:54 p	7:59 p	
Exeter, NH	6:42 a	9:17 a	2:03 p	3:50 p	9:11 p		6:52 a	9:17 a	2:39 p	5:07 p	8:14 p	
Haverhill, MA	7:05 a	9:38 a	2:24 p	4:13 p	9:33 p		7:15 a	9:38 a	2:58 p	5:28 p	8:33 p	
Woburn, MA	D 7:31 a	D 10:04 a	D 2:50 p	D 4:39 p	D 9:59 p		D 7:41 a	D 10:04 a	D 3:24 p	D 5:54 p	D 8:59 p	
ARRIVES												
Boston North Station	7:55 a	10:30 a	3:15 p	5:05 p	10:20 p		8:05 a	10:30 a	3:45 p	6:15 p	9:20 p	
NORTHBOUND	WEEKDAY SCHEDULE						WEEKEND SCHEDULE					
TRAIN NUMBER	679	681	683	685	687	689	679	691	693	695	697	699
DAYS OPERATING	M-F	M-F	M-F	M-F	M-F	M-F	Sat-Sun	Sat-Sun	Sat-Sun	Sat-Sun	Sat-Sun	Sat-Sun
DEPARTS												
Boston North Station		9:05 a	11:35 a	5:00 p	5:40 p	11:20 p		9:05 a	11:35 a	5:40 p	8:00 p	11:20 p
Woburn, MA		R 9:23 a	R 11:53 a	R 5:18 p	R 5:58 p	R 11:38 p		R 9:23 a	R 11:53 a	R 5:58 p	R 8:18 p	R 11:38 p
Haverhill, MA		9:52 a	12:22 p	5:47 p	6:27 p	12:07 a		9:52 a	12:22 p	6:27 p	8:47 p	12:07 a
Exeter, NH		10:12 a	12:42 p	6:07 p	6:47 p	12:27 a		10:12 a	12:42 p	6:47 p	9:07 p	12:27 a
Durham-UNH, NH		10:25 a	12:55 p	6:20 p	7:00 p	12:40 a		10:25 a	12:55 p	7:00 p	9:20 p	12:40 a
Dover, NH		10:32 a	1:02 p	6:27 p	7:07 p	12:47 a		10:32 a	1:02 p	7:08 p	9:28 p	12:48 a
Wells, ME		10:50 a	1:20 p	6:45 p	7:25 p	1:05 a		10:50 a	1:20 p	7:26 p	9:44 p	1:04 a
Saco, ME		11:06 a	1:36 p	7:01 p	7:41 p	1:21 a		11:06 a	1:36 p	7:42 p	10:00 p	1:20 a
Old Orchard Beach, ME		11:13 a	1:43 p	7:08 p	7:48 p	1:28 a		11:13 a	1:43 p	7:48 p	10:08 p	1:26 a
Portland, ME	6:00 a	11:45 a	2:05 p	7:35 p	8:10 p	1:45 a	6:00 a	11:45 a	2:00 p	8:15 p	10:25 p	1:45 a
Freeport, ME	F 6:30 a	12:15 p		8:05 p			F 6:30 a	12:15 p		8:45 p		
ARRIVES												
Brunswick, ME	6:45 a	12:30 p		8:20 p			6:45 a	12:30 p		9:00 p		
D STOPS TO DISCHARGE PASSENGERS ONLY R STOPS TO RECEIVE PASSENGERS ONLY F FLAG STOP, STOPS ON ADVANCE NOTICE ONLY												
SPECIAL NOTE REGARDING HOLIDAYS: Amtrak Downeaster trains will operate on the weekend schedule on the following holidays: Memorial Day, Independence Day and Labor Day. Schedules subject to change without notice. During periods of extreme heat delays can be expected.												
AMTRAKDOWNEASTER.COM 800.USA.RAIL												

Funding

Like most passenger-rail routes worldwide, ticket revenues do not cover the entire cost of operating the Downeaster. Federal funds and \$1.9 million from the State of Maine accounted for a little less than half of the Downeaster's annual operating budget in FY2013. The remainder of the budget is derived from passenger revenue.

The operational subsidy used to support Downeaster service is provided by the State of Maine through Federal Congestion Mitigation Air Quality (CMAQ) funds. The CMAQ funding and a waiver that allows Maine to use these funds for the Downeaster was included in the six-year transportation bill that expired September 30, 2009 and continued in Map-21.

Until FY13, CMAQ was the only source of non-state funding support for the Downeaster. Beginning in FY13, as a result of Portland being designated an urbanized area; NNEPRA became eligible for FTA 5337 (Fixed Guideway) Formula Funding. Since that time, NNEPRA has been able to use those funds to cover expenses associated with the maintenance of Amtrak rolling stock as well as railroad capital maintenance (incremental maintenance as well as capital maintenance/SOGR projects).

State funding is provided through the Maine DOT's multi-modal account, which is used to provide funding for non-highway projects at the discretion of the Commissioner. The account is funded through a variety of sources including Rental Car sales tax revenues. NNEPRA and the MaineDOT have a Memorandum of Understanding stating that these funds are to be used to provide match funding for the operation of the Downeaster service.

The following Table details operating revenues and subsidies as well as passenger/train miles for the last five years:

NNEPRA OPERATING BUDGET HISTORY & STATS					
	FY10	FY11	FY12	FY13	FY14
Revenue	\$ 7,502,577	\$ 8,089,061	\$ 8,470,801	\$ 9,182,013	\$ 9,926,603
Expenses	\$ 14,139,153	\$ 15,071,170	\$ 15,613,306	\$ 16,762,301	\$ 18,367,142
Total Subsidy	\$ 6,636,576	\$ 6,982,109	\$ 7,142,505	\$ 7,580,288	\$ 8,440,539
CMAQ	\$ 5,309,261	\$ 5,585,687	\$ 5,714,004	\$ 3,006,349	\$ 2,516,562
FTA 5337 SOGR				\$ 3,017,881	\$ 4,195,869
State Match	\$ 1,327,315	\$ 1,396,422	\$ 1,428,501	\$ 1,556,058	\$ 1,728,108
Riders	474,058	509,986	481,687	556,347	536,524
Ticket Revenue	\$ 6,660,814	\$ 7,097,662	\$ 6,740,060	\$ 8,117,251	\$ 8,623,686
Passenger Miles	37,854,621	37,625,317	39,002,198	45,307,427	44,405,458
Train Miles	414,618	414,960	414,390	435,000	459,980

3.3 Passenger Rail Investment Challenges and Opportunities

The traditional role of the Federal Railroad Administration (FRA) has been to promote and oversee railroad safety, and this remains a focus of FRA. However, Administration and Legislative directives in recent years, most notably the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) and the Rail Safety Improvement

Act of 2008 (RSIA), and the more recent federal stimulus and high-speed rail programs have given FRA additional responsibilities to administer funds targeted to the enhancement of the rail transportation system.

Passenger Rail Investment and Improvement Act of 2008 (PRIIA)

PRIIA directed the Administrator of the FRA to develop a National Rail Plan to identify and address the rail needs of the United States. A preliminary plan was issued in October 2009. This preliminary plan identifies a number of issues that FRA will consider in formulating the National Rail Plan.

- Increasing passenger and freight rail performance;
- Integrating all modes of transportation;
- Identifying projects of national significance; and,
- Stimulating public awareness of the issues and potential benefits from improvements in various modes of transportation, including rail.

PRIIA also directed FRA to provide assistance to states in developing their state rail plans in order to ensure consistency between the federal long-range National Rail Plan and approved state rail plans. Preliminary guidance was issued by FRA as to the content requirements of State Rail Plans in March of 2010.

Rail Safety Improvement Act of 2008

The Rail Safety Improvement Act of 2008 reauthorized FRA and the current safety program through 2013. It proposes initiatives to enhance rail safety by adding inspectors and new programs, and advances the national high-speed rail initiative by providing funding mechanisms for federal investments in infrastructure improvements.

The Rail Safety Improvement Act mandates the installation of Positive Train Control (PTC) systems by December 31, 2015 on all rail main lines carrying intercity or commuter passenger trains, or toxic inhalation hazard (TIH) chemicals, if these rail lines carry five million gross tons per year or greater. PTC provides for the automatic train control features required by the FRA for passenger train speeds in excess of 79 mph.

The PTC regulations do provide for Main Line Track Exclusions under certain specific circumstances. The Downeaster operation over the PAR main line may fall under this exception. FRA Rule §236.1019(c) (2) (ii) provides that a Limited Operations Exception may be requested and granted when: “Passenger service is operated on a segment of track of a freight railroad that is not a Class 1 railroad on which less than 15 million gross tons of freight is transported annually” and the following condition applies: The segment is signaled and no more than 12 regularly scheduled passenger trains are operated during a calendar day.

American Recovery and Reinvestment Act (ARRA)

ARRA provided more than \$48 billion in transportation funding to help bring about economic recovery and make lasting investments in the nation’s infrastructure. The resources made available in this act for transportation infrastructure were focused on transportation modes that have been traditionally publicly funded. Some of these funds were made available for rail infrastructure improvements. In addition, the Recovery Act designated \$8 billion specifically toward the development of high-speed intercity rail in the United States.⁷ NNEPRA received a \$38.2 million in Recovery Act funds to expand service to Freeport and Brunswick and \$20.8 million to improve tracks in Massachusetts which are used by the Downeaster.

⁷ Preliminary National Rail Plan, Federal Railroad Administration, October 2009.

Passenger Rail Industry Trends that May Impact Passenger Rail Development in Maine.**PASSENGER AND FREIGHT COOPERATION**

Federal law provides Amtrak a right of access to private railroad facilities. The shared use of right-of-way by passenger and freight operations has challenges, yet in many cases the two types of service may be complimentary, particularly if the expenses associated with operations and maintenance can be shared. Shared corridor improvement plans should consider and highlight potential synergies.

MEETING PASSENGER NEEDS - AMENITIES

National trends in passenger rail are relevant when considering an investment program to improve passenger service in the State of Maine. Because passenger rail transportation is a service industry, the needs of the customer must be a high priority for passenger rail providers. As intercity passenger trains travel longer distances, they tend to offer more passenger amenities.

As Americans are rediscovering the benefits of passenger rail services, the quality of the service is often a key element in the long-term success and sustainability of new or expanded rail routes. Maine's experience with the Downeaster is illustrative of the value of focusing on customer comfort and convenience. Initiatives such as having local products included for meals and snacks, to the very effective "Train Hosts" program create the kind of ambiance and comfort level that produces increases in ridership and return riders.

FARES AND DISCOUNTS

Pricing strategies are a key component of future funding scenarios for the development and expansion of passenger rail services in the United States. Special fares, discounts and promotions are often used to target specific markets and increase ridership while maximizing revenues. It is important to recognize that passenger fares typically cover only a portion of the overall operating and capital costs of providing passenger rail service. Nationally public transportation fares cover just over 30 percent of operating costs. The Downeaster has a farebox recovery of approximately 55 percent, well above the national average for all public transit that ranges in the low-to mid-30's percent.

INTERMODALISM

Facilitating intermodal connectivity is advantageous to both passengers and the operating railroad. By offering easy and cost effective transfers between modes of transportation and combination or distance-based fares (regardless of mode) passengers are encouraged to consider multi-modal travel instead of relying on the automobile. For the occasional passengers who do not ride rail transit on a regular basis, clear and readily available information on transportation options, transfers and fares offered in a coordinated way can be helpful in developing new markets.

Benefits of Public Transportation⁸**ENHANCES PERSONAL OPPORTUNITIES**

- Public transportation provides personal mobility and freedom for people from every walk of life.
- Access to public transportation gives people transportation options to get to work, go to school, visit friends, or go to a doctor's office.
- Public transportation provides access to job opportunities for millions of Americans.

SAVES FUEL, REDUCES CONGESTION

- Access to bus and rail lines reduces driving by 4,400 miles per household annually.

8 APTA, Public Transportation Facts At A Glance, 2008.

- Americans living in areas served by public transportation save 541 million hours in travel time and 340 million gallons of fuel annually in congestion reduction alone.
- Without public transportation, congestion costs would have been an additional \$10.2 billion.

PROVIDES ECONOMIC OPPORTUNITIES

- Every dollar communities invest in public transportation generates approximately \$6 in economic returns.
- Every \$10 million in capital investment in public transportation yields \$30 million in increased business sales.
- Every \$10 million in operating investment yields \$32 million in increased business sales.

SAVES MONEY

- The average household spends 18 cents of every dollar on transportation, and 94 percent of this goes to buying, maintaining, and operating cars, the largest expenditure after housing.
- Public transportation provides an affordable, and for many, necessary, alternative to driving.
- Households that are likely to use public transportation on a given day save over \$8,400 every year.

REDUCES GASOLINE CONSUMPTION

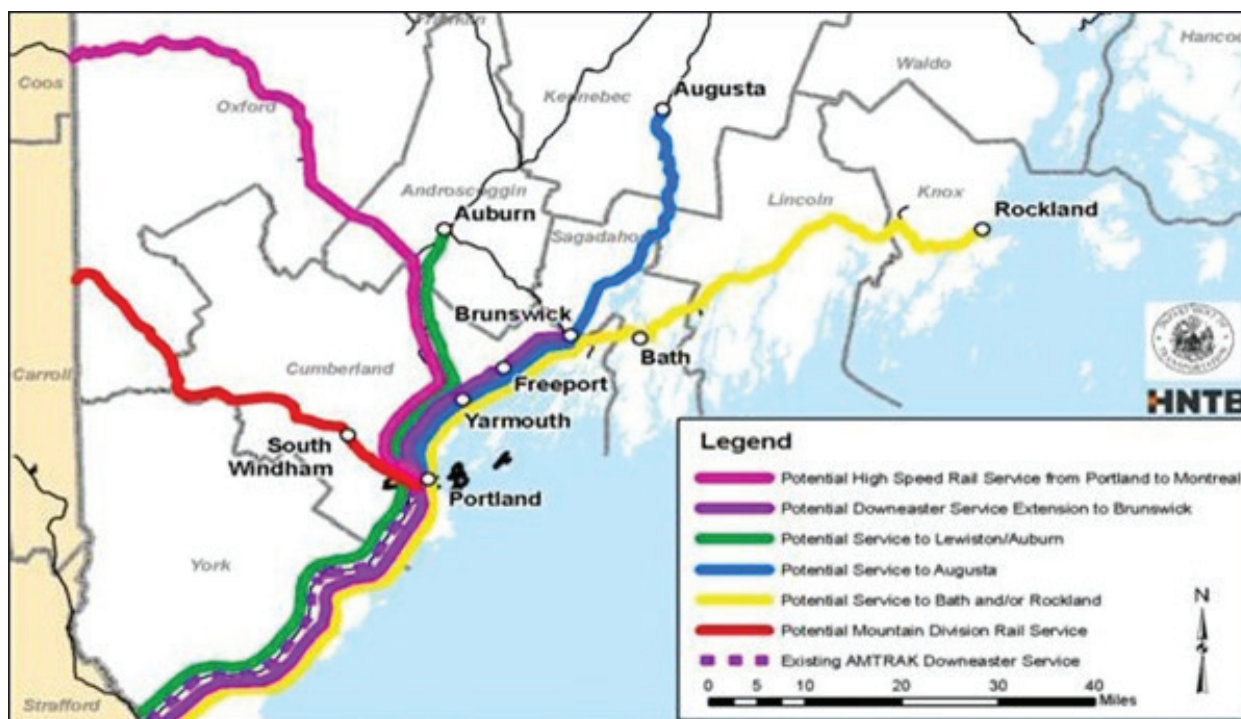
- Public transportation's overall effects save the United States 4.2 billion gallons of gasoline annually - more than three times the amount of gasoline imported from Kuwait.
- Households near public transit drive an average of 4,400 fewer miles than households with no access to public transit. This equates to an individual household reduction of 223 gallons per year.

3.3.1 Potential Passenger Rail Service Expansion in Maine

How will the passenger rail network of the future meet the needs of Maine's residents and visitors? There is strong public support for expansion of intercity rail (i.e., the Downeaster service) beyond Portland and Brunswick and an expectation that passenger rail could provide a viable alternative to address growing highway congestion in the greater Portland region. To implement new services, capital investments to existing railroad infrastructure will be required to achieve passenger operating standards, expand capacity to protect ongoing freight needs, and to develop station locations. The overall goals of such investments are to enhance mobility, encourage more sustainable land development patterns and to reduce the growth of highway congestion in the region. Maine continues to develop its tourism business and opportunities for "car free" tourism is viewed as essential to maintaining the quality of life for both tourists and residents.

Figure 3-6 illustrates passenger rail initiatives that are currently under consideration by MaineDOT and others. Some of these proposals are for extending intercity passenger rail, while others call for more local service, or commuter rail service. Commuter rail is service that operates within a metropolitan area - also called metropolitan rail, regional rail or suburban rail - or between two nearby metropolitan areas. It most often connects a central city with its suburbs, and typically operates on track that is part of the general railroad system.

Figure 3-6: Identified Passenger Rail Initiatives



Source: HNTB

These initiatives are at various levels of review and analysis. In each case, a robust alternatives analysis must be conducted if federal financial support is to be requested, and such analysis must consider a full range of options, including bus transit and demand management systems.

Downeaster Expansion to Brunswick

The expansion of Downeaster service to Brunswick had been part of the state of Maine's passenger rail plan since 1991, when the Passenger Rail Service Act was adopted by the Legislature and was accomplished in November of 2012. Funding for the Brunswick expansion project was awarded to NNEPRA through the U.S. DOT High Speed Intercity Passenger Rail (HSIPR) Program in January 2010. The project included the rehabilitation of approximately 30 miles of existing freight rail lines north of Portland, enabling the completion of the Boston to Brunswick Downeaster service. This rail line is owned by Pan Am Railways and is one of the state's most important freight corridors. Improvements made to support passenger service will contribute to improved reliability of freight service as well. The ARRA/HSIPR Grant funded the \$38.3 million⁹ project.

Upon completion of the expansion on November 1, 2012, two of the Downeaster's five daily round-trips began operating between Boston's North Station and Brunswick, along with a third roundtrip consisting of an early-morning departure and a late-evening return between Portland and Brunswick to position equipment. In Brunswick, the Maine Eastern Railroad excursion service can connect to the Downeaster with service to Rockland and subsequently Maine's island communities via the Maine State Ferry Service at Rockland the state-owned Rockland Branch. Freeport is also served by all trains going to and returning from Brunswick.

The expanded service has increased ridership, improved connectivity, balanced passenger flows, increased tourism, and supports local economic development initiatives. The newly expanded service enhances the

⁹ Federal Railroad Administration High Speed Intercity Rail Program Application, ME-Downeaster-Portland North, submitted October 2, 2009. In December, 2010 the U.S. DOT allocated an additional \$3M to the project.

opportunity to extend intercity passenger rail service to the Lewiston-Auburn region.¹⁰ A needs assessment of passenger service demand in this market has been conducted, concluding that the region can support feeder service from key markets to specific stations once Downeaster core frequency has been increased.

Additional Downeaster Initiatives

Research has identified that the current levels of frequency, travel time and reliability are key to continued increases in the utilization of the Downeaster service. NNEPRA is in the process of completing a Service Development Plan (SDP) to identify the immediate-to-medium term (20 year) market needs of the region and specific rail projects which will improve Downeaster service to meet those needs. Challenges to the continued growth of the existing Downeaster service include the inefficiency of the current service to Brunswick, the limited frequency of service to Brunswick, travel time and the “gaps” in service frequency between Portland and Boston. Therefore, projects identified will improve ridership and by reducing overall travel time, increasing frequency and improving reliability, then look to expand service to other locations. NNEPRA is also evaluating the economic development impacts which have occurred, and updated projection of impacts which might occur with an increased level of service.

The Downeaster MBTA Track Improvement Project, currently under way, will result in a more reliable Downeaster service, while setting the stage for an additional frequency in the future. The 38-mile segment of the Downeaster corridor location in Massachusetts is owned by the Massachusetts Bay Transportation Authority (MBTA) and is used in commuter rail service operated by the Massachusetts Bay Commuter Railroad (MBCR) under contract to the MBTA. A significant portion of the MBTA segment is constrained by single track shared by the MBTA commuter service, Pan Am Railway freight trains and the Downeaster. The planned improvements on the MBTA-owned line will provide a critically needed passing siding and increased train velocities between Wilmington and Andover, and replace old rail, resulting in benefits to all users. The total Project cost is \$26,027,764; NNEPRA received a federal High-Speed Intercity Passenger Rail grant for \$20,822,341 in 2010 and the MBTA provided a match of \$5,205,423.

NNEPRA's additional near-term priority projects, which will increase and improve Brunswick-Boston service include:

- A Brunswick layover facility to provide turnaround servicing for Downeaster trains, which will result in increased frequency, improved reliability, and reduced net operating costs;
- A passing siding at Royal Junction, which will increase the frequency of Downeaster trains between Portland and Brunswick, increase ridership and maximize the efficiency of the service;
- A Wye track in Portland to eliminate the need for Downeaster trains to backup and reverse directions when travelling between Portland and Brunswick, which will reduce travel time by 10 minutes and increase ridership.

Additional, longer-term service improvements being explored by the SDP for the Downeaster are consistent with the corridor vision shared by the three states and communities within the corridor. Common objectives include increased mobility options for residents and visitors, focused development near stations, and enhanced freight and commuter rail operations.

While the SDP does not anticipate that maximum Downeaster operating speeds will exceed 79 mph in the next 20 years, overall travel time can be reduced by 10-15 minutes with a series of track and signal infrastructure improvements which result in an increase of average speed over the line. Additional capacity, combined with reduced travel time, would allow the addition of a 6th Downeaster frequency between Portland and Boston using

¹⁰ “Moving People and Goods: The Governor’s Rail and Port Investment Plan to Transform Transportation in Maine.”

the same amount of equipment (three train sets) currently used in the service. This would enable an additional Brunswick-Boston run mid-morning, and a Boston-Brunswick run mid-afternoon to fill current schedule gaps of up to five hours. The specific elements of the Plan, still under development, include the rehabilitation of several curves and crossings, the addition of more than 15 miles of additional double-track capacity, the addition of a second passenger platform in Wells to provide passenger train meets, and the addition of a center platform and capacity for board of two trains simultaneously at Portland Station to meet growing needs. Amtrak estimates that these improvements could increase Downeaster ridership by as much as 150,000 riders annually. The Plan, which would require an investment of approximately \$100 million, will also set the stage for service expansion to Auburn, Maine, one of the NNEPRA Board's key objectives.

At this time, it is anticipated that passenger service to Lewiston/Auburn area would be operated as a "feeder service" between Lewiston/Auburn and Portland with a cross platform transfer to Boston-bound trains. The feeder service could be operated with more nimble and efficient DMU (diesel multiple unit) equipment. The capital cost associated with Lewiston/Auburn service is still being developed, but previous estimates have indicated a infrastructure costs of \$35M - \$75M. From Lewiston/Auburn, additional expansion to Western Maine, including the Bethel area or even Montreal have been discussed but are not currently included in formal planning efforts. Also discussed and under preliminary investigation are "feeder" services between Rockland and Brunswick and Augusta and Brunswick, and a seasonal intermittent stop in Kennebunk, Maine.

The proposed improvements will also help to reduce the growth of congestion on the I-95 corridor between Portland and southern New Hampshire. It is anticipated that the improvement in Downeaster travel time will result in the diversion of automobile travelers to the improved passenger rail service.

Further expansion of Downeaster service or an increase in frequency beyond six round-trips will require additional rail equipment. NNEPRA's agreement with Amtrak includes the provision of three sets of equipment. An equipment assessment is under development to identify both the type of equipment and potential funding sources. NNEPRA is coordinating this with national efforts (as required by PRIIA) being undertaken by states to establish specifications for domestically made rail cars to meet growing industry needs.

3.3.2 Other Identified Rail Corridor Projects

Commuter Service North of Portland

The purpose of the Portland North Alternative Modes Transportation Project was to study potential transit improvements - in the form of either commuter rail service or Bus Rapid Transit (BRT) - between Portland and Brunswick and/or Auburn. The Portland North Project follows on work completed in previous studies:

- I-295 Corridor Transportation Study.
- Draft Environmental Assessment for the Portland North Passenger Rail Service Extension Project.
- Potential extensions of the Amtrak Downeaster service.
- Other previous bus and rail studies.

Following Federal Transit Administration (FTA) guidelines the project has examined a wide range of alternatives, both routes and modes, and evaluated demographic and rider-ship data. The Study concluded that a commuter rail service north of Portland would not qualify for FTA funding at this time.

Brunswick to Bath/Rockland

The Maine Eastern Railroad excursion service between Brunswick and Rockland is considered an element in

Maine's passenger rail network. The 50+ mile route is a model of a successful transformation by MaineDOT of an abandoned rail line leased to a short line operator for freight and passenger services. Now that the Downeaster provides daily service to Brunswick, it is anticipated that more frequent connecting service may be instituted on the Rockland Branch. This would allow intercity rail passengers to reach Maine's coastal communities by rail - enabling achievement of one of Maine's long standing transportation goals - car free tourism.

Mountain Division Restoration

The MaineDOT contracted with HNTB in 2007 to evaluate the condition and potential passenger and freight rail uses of the 50 mile state-owned Mountain Division rail line in southern and western Maine.

The study concluded that if the line could have the potential to serve freight customers if it were upgraded to Class 2 standards. It was determined that the upgrade was estimated to cost \$31.4 million. This level of investment would also make it possible for passenger excursion service to operate (maximum authorized speed of 40 mph). The study found that the population density in the surrounding communities was not sufficient to support the much larger investment capital and operating investments required to support commuter rail service. MaineDOT made an effort to solicit \$28.5 million in funding for this effort from the FRA through the TIGER program for the initial Class 2 upgrade, however funding was not awarded. Subsequently, the Maine Legislature appropriated \$4M in state bond funds to initiate an upgrade of this rail line.

As part of its maintenance program MaineDOT has performed culvert repairs and other holding actions performed to preserve the line. Not included in current cost estimates would be continuing the project across the state line to provide for a connection to the Conway Scenic railroad, and the tourist centers in the region. This project could proceed incrementally, with initial rehabilitation being focused on development of freight operations, with passenger services developing over time.

High-Speed Rail (HSR)

The Obama Administration has initiated a new approach for developing high-speed passenger rail in America that calls for a collaborative effort by the Federal Government, States, railroads, and other key stakeholders to help transform America's transportation system through the creation of a national network of high-speed rail corridors. To achieve this vision, FRA launched the High-Speed Intercity Passenger Rail (HSIPR) Program in June 2009.

The HSIPR Program supports a series of strategic transportation goals: building a foundation for economic competitiveness; ensuring safe and efficient transportation choices; promoting energy efficiency and environmental quality; and supporting interconnected livable communities. In the long-term, HSIPR Program funding is intended to build an efficient, high-speed passenger rail network connecting major population centers 100 to 600 miles apart. The foundation for the HSIPR Program is contained in the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) and the American Recovery and Reinvestment Act of 2009 (ARRA or Recovery Act).

PRIIA, enacted in October 2008, established three new competitive grant programs for high-speed and intercity passenger rail capital improvements. In February 2009 the Recovery Act provided \$8 billion for these new high-speed and intercity passenger rail grant programs.

In December 2009, Congress appropriated an additional \$2.5 billion for the HSIPR Program in the FY2010.

Department of Transportation Appropriations Act. This funding will supplement projects funded under the

Recovery Act and invest in new planning, engineering, and environmental studies; individual capital projects; and large-scale service development programs.

Definitions:

High-Speed Rail (HSR) and Intercity Passenger Rail (IPR)* HSR – Express. Frequent, express service between major population centers 200–600 miles apart, with few intermediate stops. Top speeds of at least 150 mph on completely grade-separated, dedicated rights-of-way (with the possible exception of some shared track in terminal areas). These services are intended to relieve air and highway capacity constraints.

HSR – Regional. Relatively frequent service between major and moderate population centers 100–500 miles apart, with some intermediate stops. Top speeds of 110–150 mph, grade-separated, with some dedicated and some shared track (using positive train control technology). These services are intended to relieve highway and, to some extent, air capacity constraints.

Emerging HSR. Developing corridors of 100–500 miles, with strong potential for future HSR Regional and/or Express service. Top speeds of up to 90–110 mph on primarily shared track (eventually using positive train control technology), with advanced grade crossing protection or separation. These services are intended to develop the passenger rail market, and provide relief to other modes.

Conventional Rail. Traditional intercity passenger rail services of more than 100 miles with as little as one to as many as 7–12 daily frequencies; may or may not have strong potential for future high-speed rail service. Top speeds of up to 79 mph to as high as 90 mph generally on shared track. These services are intended to provide travel options in regional corridors.

* Corridor lengths are approximate; slightly shorter or longer intercity services may still help meet strategic goals in a cost effective manner.

The USDOT's Vision for High-Speed Rail in America (Figure 3-7) includes enhancements to the Northeast Corridor, as well as incremental steps to utilize the northern New England High-Speed Rail Corridor that will ultimately connect Boston, Springfield, and Portland with Montreal. The Maine leg of this corridor is consistent with Maine's long-range transportation plans, and reflects the cultural, economic and historic relationships of the state and the nearby Canadian provinces. A market study in 2000 found that as many as 600,000 travelers per year might utilize passenger rail connecting Maine to Montréal.

Figure 3-7: Vision for High-Speed Rail in America



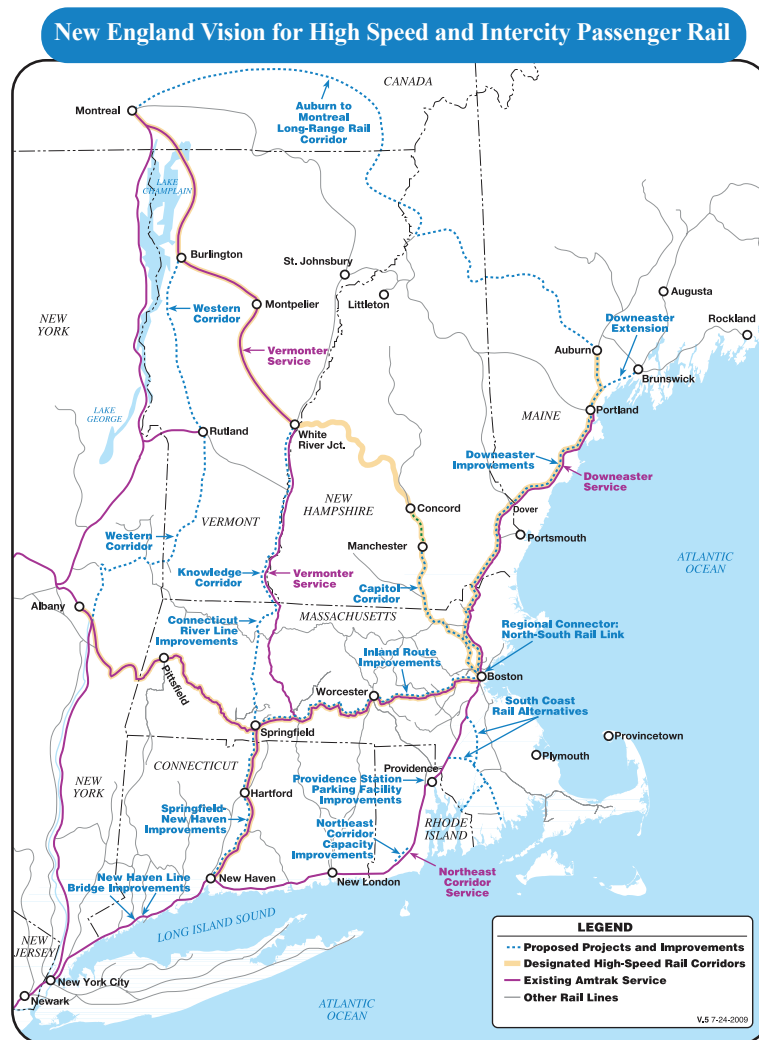
Source: USDOT, Vision for High-Speed Rail in America

In response to the HSIPR initiative and because of the interdependency of New England's transportation system, the New England states have developed a regional vision for high-speed and intercity rail. The goal is to create a network of high-speed and intercity passenger rail routes that connect every major city in New England with smaller cities, rural areas and internationally to Montréal. Maine's passenger rail network is part of the regional feeder network to the Northeast Corridor.

The Coalition of Northeastern Governor's (CONEG) Vision for the New England High-Speed and Intercity Rail Network outlines proposals for passenger rail expansion in the northeastern U.S. (Figure 3-8). The plan includes the reduction in time of the current Downeaster service.

The Portland to Lewiston/Auburn route is part of the federally designated Northern New England High-Speed Rail Corridor. Rail planning in this corridor has included the design and permitting of a new intermodal facility at the Lewiston/Auburn airport, which would improve connections for auto, bus, rail and air travelers, and would serve commuters working in the Portland region. The future extension of intercity passenger rail to the Lewiston/Auburn region is an incremental step in further development of the state's passenger rail network.

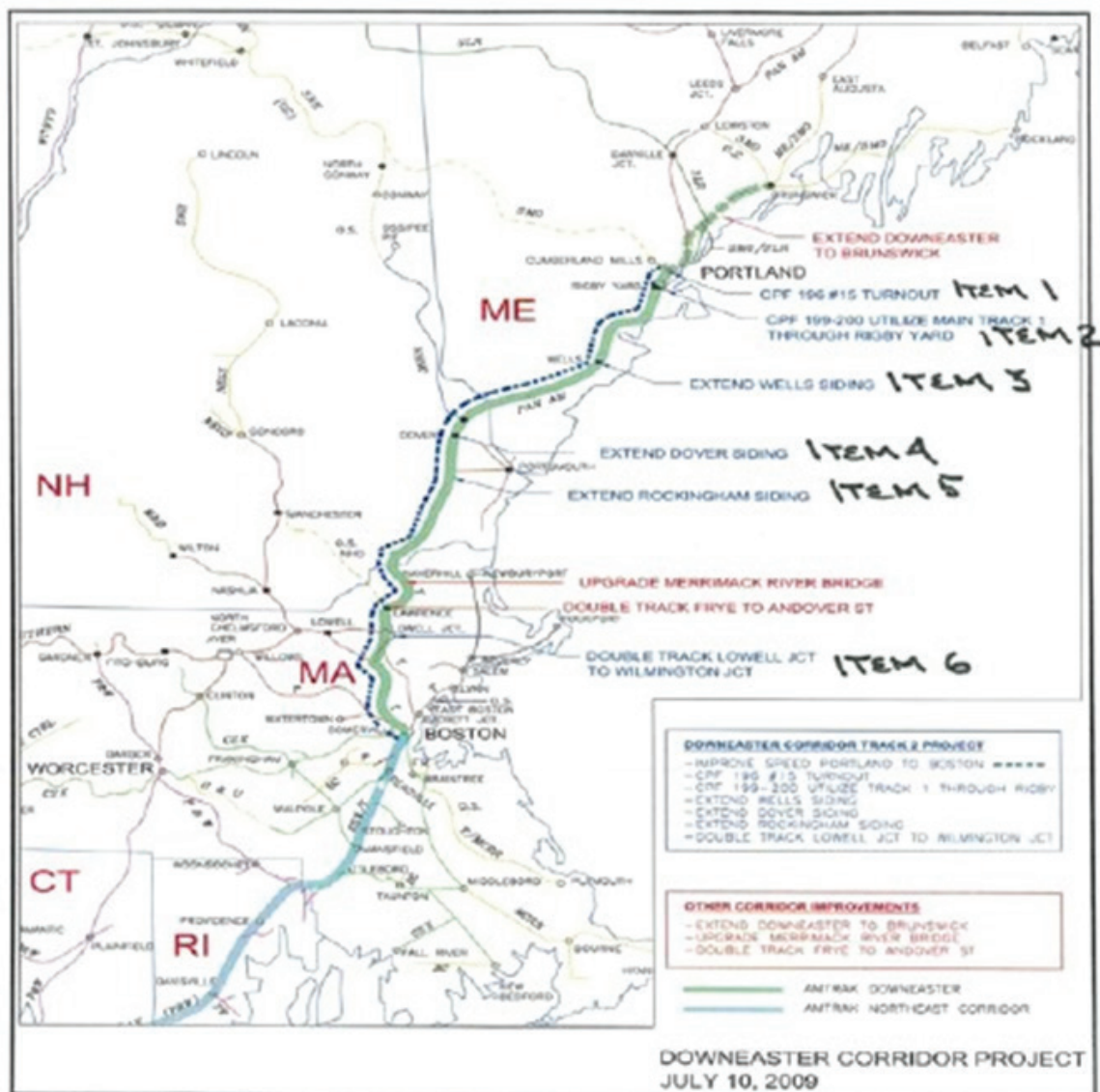
Figure 3-8: New England Vision for High-Speed and Intercity Passenger Rail



Source: CONEG, *Vision for the New England High-Speed and Intercity Rail Network*

Just as improvements to the Northeast Corridor are part of the regional vision, so too are the improvements to the Downeaster corridor between Portland and Boston. A three state collaborative effort, the development of the corridor plan takes into account the needs of both intercity and commuter rail operations and the accommodation of continuing, and perhaps growing, freight services. Figure 3-9 illustrates the planned improvements in the corridor, some elements of which are being undertaken by the MBTA in Massachusetts.

Figure 3-9: Downeaster Corridor Improvements Plan



3.4 Passenger Rail Needs

The following passenger rail needs were identified through the State Rail Plan development process:

1. **Improvements to the Downeaster Corridor Need to Continue.** The Downeaster service is the core of the state's intercity passenger rail system. Continued improvements to the Brunswick to Boston corridor to achieve reduced transit time, improved reliability and frequency are essential to the continued success of the Downeaster and the development of any additional or expanded.
2. **Multimodal Connectivity to the Downeaster Service Needs to Improve.** The development of Downeaster stations as transportation hubs must continue, increasing accessibility and mobility options to the greatest number of residents and visitors, and expanding on the successful economic impacts which have been achieved along the corridor.

3. **Corridors** for the next phases of development of passenger rail, including both intercity or commuter service, need to be identified and prioritized. Those under consideration include Portland to Lewiston/Auburn, commuter services for the greater Portland region. Residents in Augusta, Rockland eastern and northern Maine have also expressed interest in passenger rail services.
4. **Long-Range Planning for Regional Corridor Development** in coordination with neighboring states and provinces, and regional planning agencies, needs to continue. Passenger rail initiatives must consider the need to retain and enhance freight rail operations.
5. An **Equipment Plan** is needed to provide for the replacement and expansion of the Downeaster fleet, and any additional passenger rail services. The plan must include the development of facilities for storage and maintenance.
6. **A Policy is Needed to Assure that Rail Corridors are Protected** for future transportation services throughout Maine.
7. **A Funding Mechanism** that is adequate, sustainable and predictable to enable both capital investment and ongoing operations and maintenance of passenger rail services is critical in order to sustain existing services and provide passenger rail growth to and within the State of Maine.

CHAPTER 4 | *Commodity Flow, Demographic, Environmental, and Economic Conditions and Trends*

As has been described in earlier chapters, the freight rail system in Maine has undergone significant changes, especially in the past 20 years. The purpose of this chapter is to identify trends that may suggest future needs, this chapter provides an in-depth presentation and analysis of commodity flow data, demographic trends and overall economic conditions in the state.

4.1 *Commodity Flow Data and Analysis*

To assess the rail infrastructure needs in Maine it is essential to examine and understand the nature and volume of commodities moving in and out, within and through the state. This section provides insight into Maine's current rail operations by describing the commodities being shipped on Maine's rail system, as well as by other modes, and identifying the key corridors.

This analysis of rail movements in Maine covers all commodity movements on the rail system, for the four major types of flows:

- **Originating Traffic:** Goods originating in Maine with a destination outside of Maine;
- **Terminating Traffic:** Goods originating outside of Maine with a destination in Maine;
- **Intrastate Traffic:** Goods that have both an origin and a destination within the Maine state borders; and
- **Through Traffic:** Goods that have an origin and a destination outside of Maine, travel through the state along the state's rail infrastructure, and are sometimes referred to as bridge traffic.

There are two primary data sources used in the commodity flow analysis:

1. **Surface Transportation Board (STB) Carload Waybill Sample.** This is a sampling of rail activity in Maine based on railroads that terminate more than 4,500 cars per year. This data provides insight into movements over Maine's major rail infrastructure (inbound, outbound, internal and through trips) by various measures for the year 2007. Three major rail lines contribute to the data: Canadian National (CN), Montreal, Maine and Atlantic (MM&A), and ST Rail System (ST).¹ Twenty-four other rail lines, which do not have a physical presence in Maine, report Waybill data on freight moved in or through the state, and are thus also included in this analysis. Generally these are cars that originate on other rail lines elsewhere in the United States or Canada and transfer lines at some point, and then terminate or travel through Maine on a rail line with physical infrastructure in Maine. Other small railroads exist in Maine, but they do not necessarily meet the requirements to report a waybill sample to the STB and are thus not included in this analysis. This data provides the county-level rail information presented.
2. **Federal Highway Administration – Freight Analysis Framework (FAF).** The FAF data is publicly available with geographic coverage of states and major metro areas (but not county-level in most cases). The FAF historical data is also for 2007. Earlier forecasts (developed in 2002) provide alternative future freight flow demand scenarios. The FAF provides data for both tonnage and value for all modes and thus is the source of data for commodity flow by value and modal shipping comparisons. It does not cover through-trips, however,

¹ CN, while not operating in the state of Maine, is the primary connecting carrier for much of the state's rail traffic. ST Rail System is now known as Pan Am Railways, and includes the properties and operations of the former Boston & Maine and Maine Central Railroads, and Portland Terminal.

which is a key limitation of the data.²

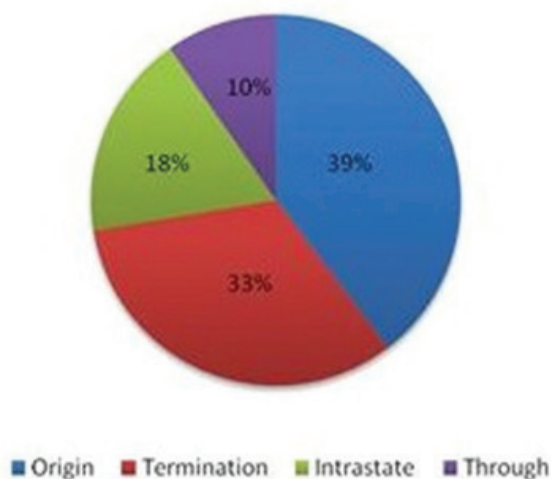
With the global economic situation of 2008-2009 much has changed in the state of the economy since the publication of the data based in 2002-2007. Thus the data does not incorporate the overall decline in rail movements due to the decline in economic activity across the country, or the structural changes in the US economy that are emerging as the national economic recovery takes shape. Nonetheless, it does provide the best available information to depict historical rail volumes and shipping patterns. The post-recession patterns of trade are likely to be different, given the differences in both US and international recovery patterns. In fact, since 2011 energy related products such as oil and propane have become major commodities moved by rail in the region, including shipments from central US sites to and through Maine. Adequate data is not yet available but indicators suggest a continuation of growth in this market for both rail and maritime trade.

Rail Traffic and Freight Flow

The rail system in Maine handles a variety of freight traffic but is dominated by inputs and outputs related to the paper industry. The two largest rail companies serving Maine are the MM&A and Pam Am Railway (PAR), and their traffic data is included in the STB Waybill sample. While there are other short-line railroads in Maine that move freight, they are not required to report a waybill to the STB based on their low volumes, and are consequently not included in this analysis.

Freight rail in Maine is rather evenly distributed between origins and destinations, as shown in Figure 4-1 and Table 4-1, with approximately 39 percent of freight traffic originating in Maine, 33 percent terminating, 18 percent traveling internally and 10 percent passing through the state.

Figure 4-1: Share of Maine Rail Freight by Origin, Termination, Intrastate, or Through Traffic



Commodities are identified using two-digit Standard Transportation Commodity Codes (STCCs), which assign both a description and a number to each commodity. Given Maine's history as a paper producer, it is unsurprising that the top commodity originating in Maine is pulp, paper and allied products – accounting for 2 million tons of originating rail shipments, or 75 percent. The second most heavily shipped commodity is lumber or wood products, which is related to the paper industry, shipping more than 554 thousand tons that originate in Maine.

² A more recent version released in early November 2010 and uses updated data from 2007, coupled with forecasts through 2040. The new FAF3 includes truck traffic assigned to the NHS as coded by Oak Ridge National Laboratory. This information was not available in time to be incorporated into this report, but should be referenced in future rail plan updates – especially for divertible truck movements.

Combined with pulp and paper, these two commodities account for 96 percent of Maine originating rail traffic.

Rail freight terminating in Maine is much more diverse than freight originating in Maine and terminating elsewhere. Pulp and paper products and lumber and wood products account for just over 680 thousand tons of rail freight terminated in Maine in 2007, or nearly 31 percent. Additional paper related commodities – clay, concrete, glass or stone and hazardous materials (primarily consisting of chemicals and petroleum products) – account for an additional 40 percent of terminating tonnage, and are primarily used as inputs to the paper production process. In total, the paper related commodities account for approximately 71 percent of terminating rail freight.

Other commodities shipped by rail in the state include food or kindred products, chemicals or allied products, farm products and coal; each accounts for more than 100 thousand annual tons.

Table 4-1: Maine Commodities by Movement Type, 2007

STCC	Description	Origin	Termination	Intrastate	Through	Total	% Total
26	Pulp, Paper, or Allied Products	2,011,560	518,240	486,320	292,160	3,308,280	49.1%
24	Lumber or Wood Products	354,080	161,960	160,920	134,200	1,011,160	15.0%
32	Clay, Concrete, Glass or Stone Products	8,760	395,960	300,360	23,520	728,800	10.8%
49	Hazardous Materials	-	435,860	84,680	43,280	622,760	9.3%
20	Food or Kindred Products	6,400	191,848	3,160	81,320	282,728	4.2%
28	Chemicals or Allied Products	3,280	227,400	-	13,920	244,600	3.6%
	Farm Products	28,320	129,856	-	3,280	61,256	2.1%
11	Coal	-	-	146,400	-	46,400	2.2%
40	Waste or Scrap Materials	43,840	17,080	2,600		63,520	0.9%
37	Transportation Equipment	9,120	1,720	-	50,080	60,920	0.9%
	All Others	1,520	71,128	18,400	9,880	100,928	1.5%
TOTALS:		2,666,880	2,204,792	1,203,040	656,640	6,731,352	100.0%

Source: STB Carload Waybill Sample 2007

Due to its location in the Northeast corner of the United States, proximity to Canada and relatively lengthy international border (more than 611 miles), Maine is an important gateway for rail freight from the eastern Canadian Provinces. As illustrated in Table 4-2, Maine serves primarily as a destination or pass-through for freight originating in Canada. Exports from Maine to Canada represent less than one quarter of total movements.

Table 4-2: Canadian Rail Movements Involving Maine, 2007

Province		Destination Maine	Through Maine, Ori- gin province	Total	% of Total
New Brunswick	-	108,680	487,280	595,960	28.4%
Quebec	158,000	278,720	77,800	514,520	24.5%
Ontario	-	277,680	50,080	327,760	15.6%
Nova Scotia	272,200	22,120	3,760	298,080	14.2%
British Columbia	-	210,600	6,120	216,720	10.3%
Alberta	-	114,120	6,200	120,320	5.7%
Manitoba	-	3,960	8,240	12,200	0.6%

Source: STB Carload Waybill Sample 2007

Table 4-3 illustrates the movements of goods passing through Maine, with the primary destination being New Brunswick. The origins have more variation, but the largest tonnage – slightly more than half – moves from Ontario to New Brunswick.

Table 4-3: Canadian Rail Movements Passing Through Maine by Origin and Destination, 2007

Origin	Destination	Tonnage
Ontario	New Brunswick	50,080
Quebec	New Brunswick	5,360
New Brunswick	Quebec	2,810
Manitoba	New Brunswick	8,240
Saskatchewan	New Brunswick	7,410
British Columbia	Nova Scotia	6,120
TOTAL		100,080

Source: STB Carload Waybill Sample 2007

In terms of value, as Table 4-4 shows, the top commodities moved for all Maine freight are relatively similar for both tonnage and value. More than half of the value of commodities shipped by rail is attributable to newsprint and paper, and nearly one-quarter attributable to wood products.

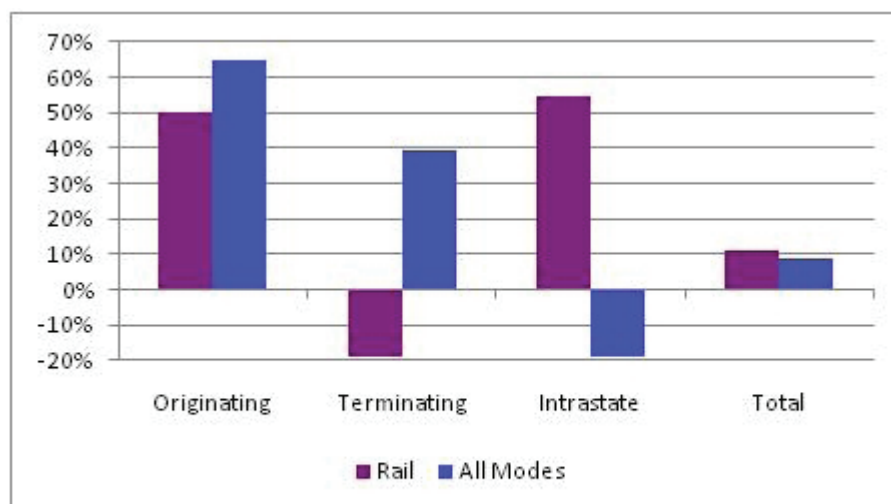
Table 4-4: Top Ten Rail Commodities Value in Millions of Dollars, 2007

Commodity	Mil Dollars	% of Total
News/print/paper	1,540	55%
Wood prods.	637	23%
Chemical prods.	163	5.8%
Plastics/rubber	139	4.9%
Coal-n.e.c.	76	2.7%
Electronics	48	.7%
Paper articles	45	.6%
Basic chemicals	43	1.5%
Nonmetallic minerals	36	1.3%
Motorized vehicles	31	1.2%

Source: FHWA's Freight Analysis Framework (FAF2)

Overall, rail tonnage as measured by origination, termination and intrastate traffic actually increased from 1997 to 2007. Terminating rail tonnage has decreased by 19 percent, but this was offset by robust increases in originating and intrastate movements that increased 50 and 55 percent, respectively. Figure 4-2 below shows the trends by movement type.³

Figure 4-2: Growth in Rail and All Modal Freight Tonnage, 1997 to 2007

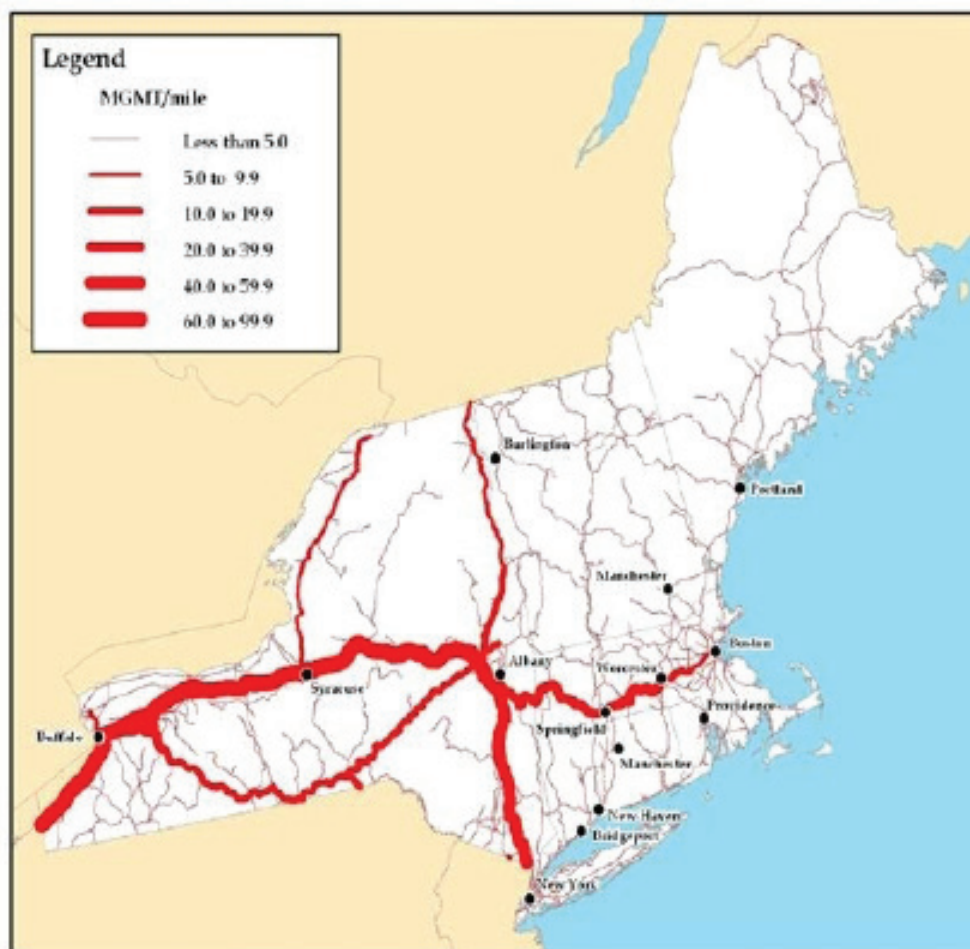


³ Note that there are no through movements included, as the FAF does not track these movements.

Source: FHWA's Freight Analysis Framework (FAF2)

While Maine rail volumes have been growing, they still are relatively small compared to the New England region, and relative to other areas of the United States and Canada. Figure 4-3 illustrates the annual rail freight flows in the New England area and New York for 2004.

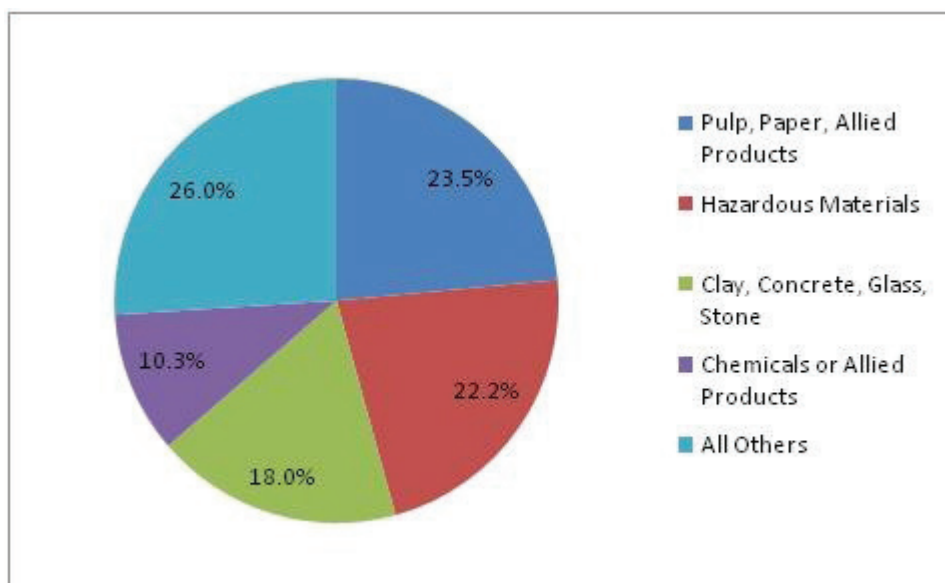
Figure 4-3: Annual Rail Freight Shipments (Tons/Mile)



Source: Northeast Rail Operations Study (NERops) Phase I Final Report, July 2007

4.1.1 Terminating Traffic

The four most heavily transported commodities arriving in Maine from other states or provinces are pulp, paper, or allied products (24 percent), hazardous materials (22 percent), clay, concrete, glass, or stone (18 percent) and chemicals or allied products (10 percent). These commodities account for nearly 75 percent of the 2.2 million tons of rail traffic terminating in Maine. This is illustrated in Figure 4-4 below.

Figure 4-4: Share of Rail Traffic Originating Elsewhere and Terminating in Maine, by Commodity, 2007

Source: STB Carload Waybill Sample 2007

Fifty-four percent of the rail freight terminating in Maine originated in one of 32 U.S. states. Freight originating in Canada accounted for 46 percent of all traffic terminating in Maine.

Pulp and paper and hazardous materials (primarily chemicals and petroleum products), lumber products, and chemicals were the primary goods transported from Canada. Quebec and Ontario each accounted for 12.6 percent of tonnage, while British Columbia accounted for 9.6 percent.

Vermont and Georgia were the next two largest originations of rail freight, accounting for 9.5 and 8.7 percent of shipments, respectively, with primarily clay, concrete, glass or stone commodities delivered to Maine. The mix of commodities should not be surprising given the large presence of the paper industry in the Maine economy, to which most of these commodities are directly related. Figure 4-5 shows a map of the origins of freight terminating in Maine.

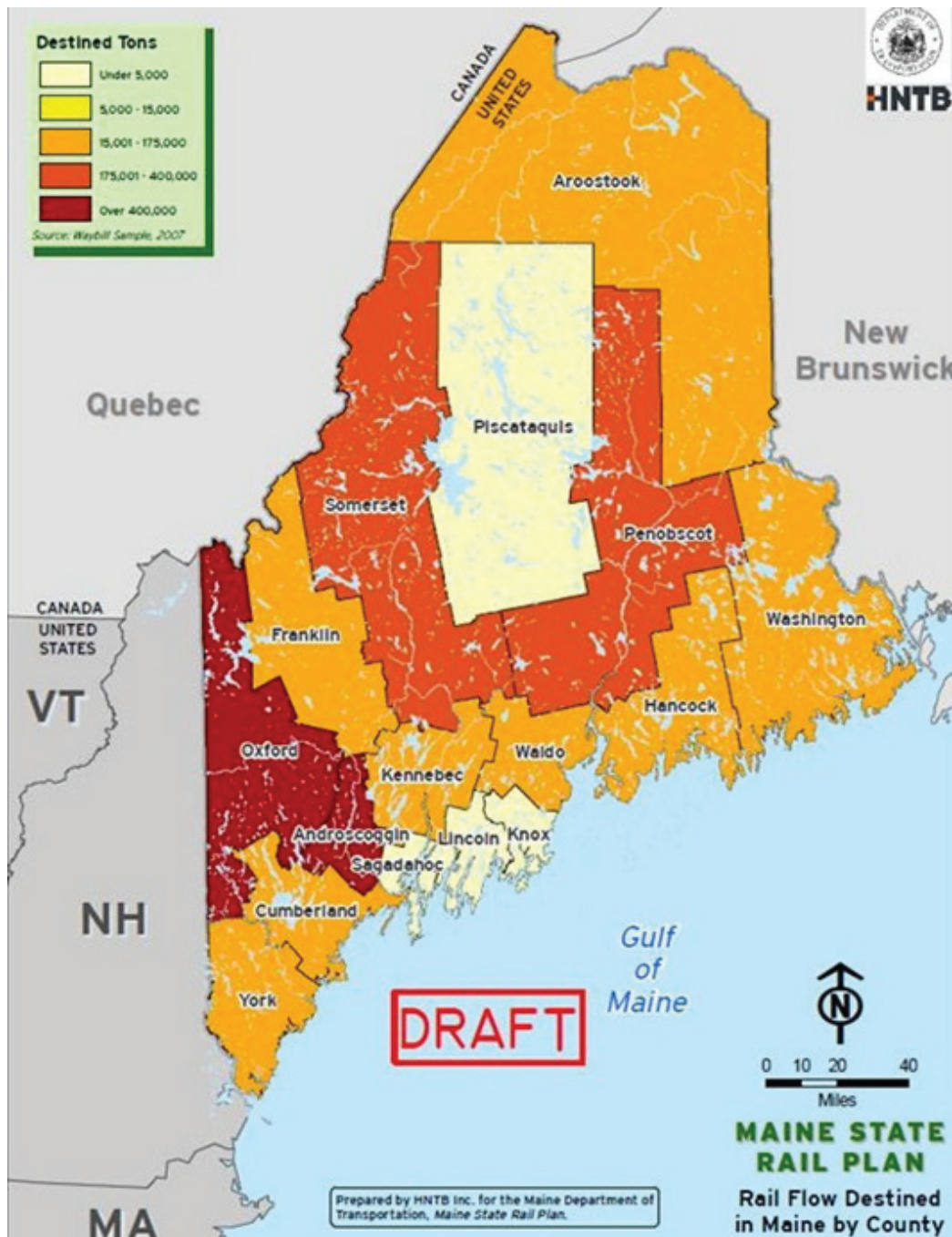
Figure 4-5: Origin of Rail Freight Destined to Maine



Source: STB Carload Waybill Sample 2007

Figure 4-6 shows the top counties by rail termination in Maine. Androscoggin and Oxford Counties were the top two destinations for rail freight tonnage in 2007, accounting for nearly 684,000 and 425,000 rail tons, respectively. This represents slightly more than half of rail tonnage terminating in Maine, and these counties include two of the larger pulp and paper mills in the state, as well as a growing ware housing sector.

Figure 4-6: Rail Flow Destined to Maine by County



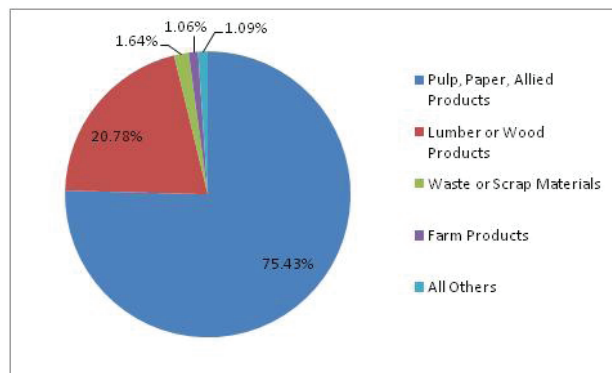
Source: STB Carload Waybill Sample 2007

4.1.2 Originating Traffic

The primary commodities comprising the 2.7 million tons of rail freight that originate in Maine and terminate elsewhere are pulp, paper or allied products (75 percent) and lumber or wood products (21 percent), together accounting for nearly all of the freight rail traffic originating in Maine Figure 4-7. Tonnage of pulp and paper products moving out of Maine by rail is the largest volume in New England and New York at 29,400 carloads in

2007. Despite Maine's regional dominance with this commodity, this volume is still smaller than some of the largest states shipping paper by rail. For example, Alabama, Louisiana and Georgia each shipped 55,000 carloads or more in the same period.⁴

Figure 4-7: Share of Freight Originating in Maine by Commodity



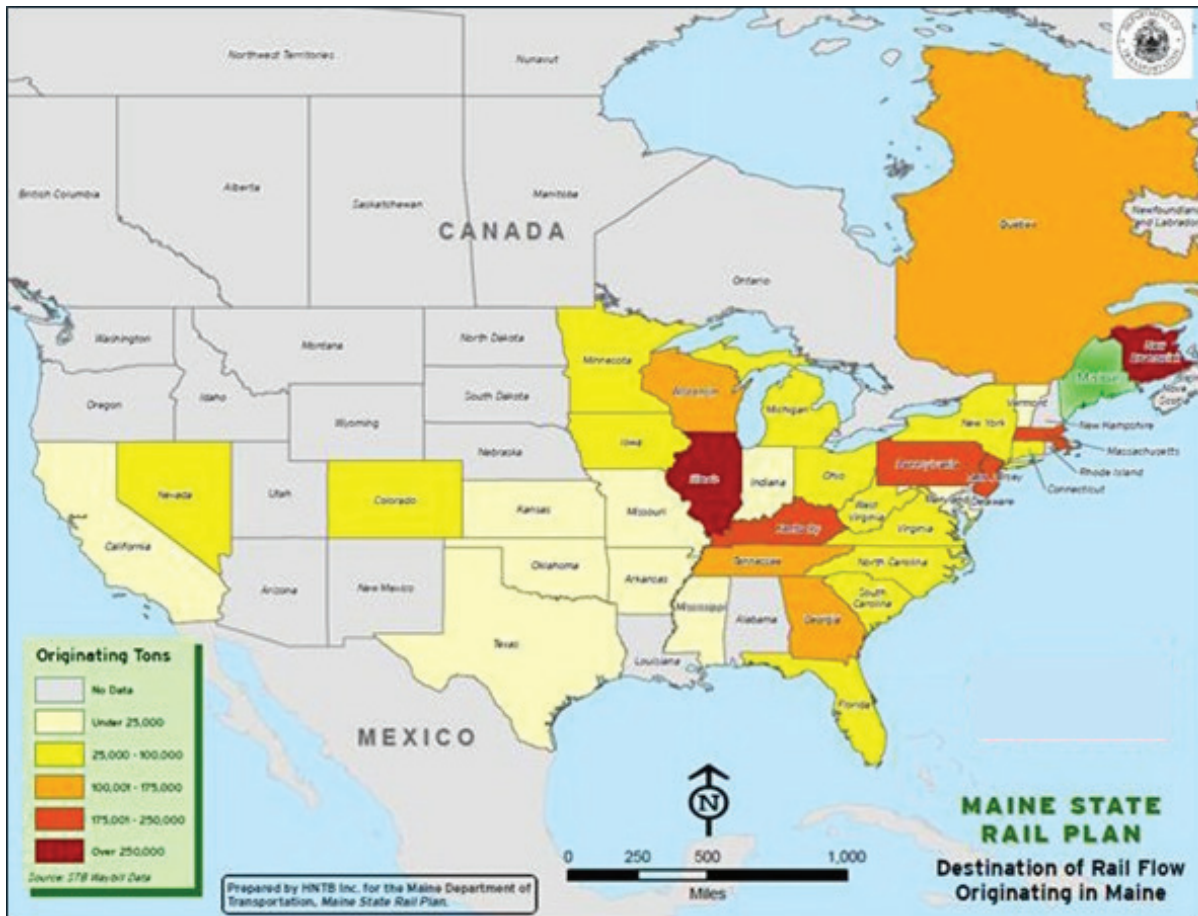
Source: STB Carload Waybill Sample 2007

As shown in Figure 4-8, rail freight originating in Maine terminated in 33 different states and provinces. As mentioned previously, the largest destination for freight originating in Maine is New Brunswick. Just over 10 percent of the freight originating in Maine terminates in this Canadian Province. Interestingly, all of the freight destined for New Brunswick from Maine is lumber or wood products. The second largest destination in terms of tonnage is Illinois, with nearly 10 percent of freight, primarily pulp, paper, or allied products.

The other top destinations, representing more than 8 percent of freight, are Massachusetts, Pennsylvania and Kentucky, which also move significant amounts of pulp and paper products. In total, about 16 percent of freight originating in Maine terminates in Canada.

⁴ Association of American Railroads State Profiles and Rankings.

Figure 4-8: Destination of Rail Freight Originating from Maine



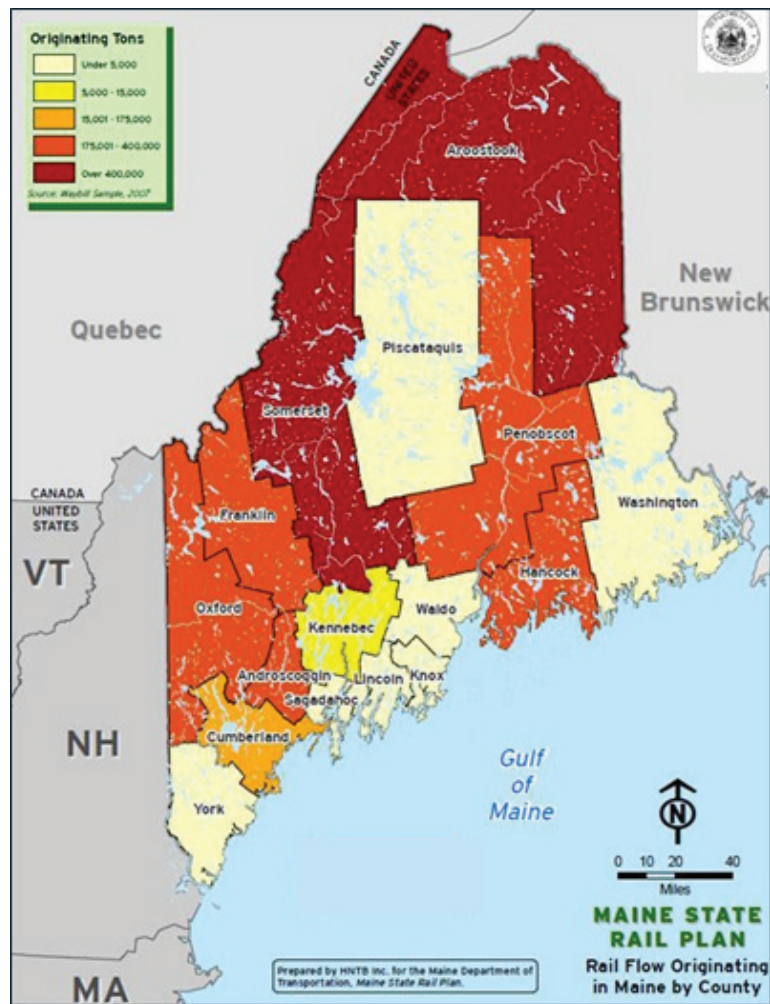
Source: STB Carload Waybill Sample 2007

In addition to lumber and pulp/paper products, clay and concrete, transportation equipment, waste or scrap materials, and mixed shipments are also shipped via rail to Canada.

As Figure 4-9 illustrates, Aroostook and Somerset Counties in Maine originate the greatest volume of freight. Aroostook County originated more than 710 thousand tons in 2007 and Somerset County nearly 509 thousand tons. Together, these two counties accounted for almost 46 percent of all rail originations in Maine. The importance of rail service in this region of the state cannot be understated. The loss of rail service in Aroostook County would have made the region solely reliant on trucking.

The State's acquisition of the MMA lines in the county preserved this service, and encouraged an increase in rail's market share.

Figure 4-9: Rail Flow Originating from Maine by County



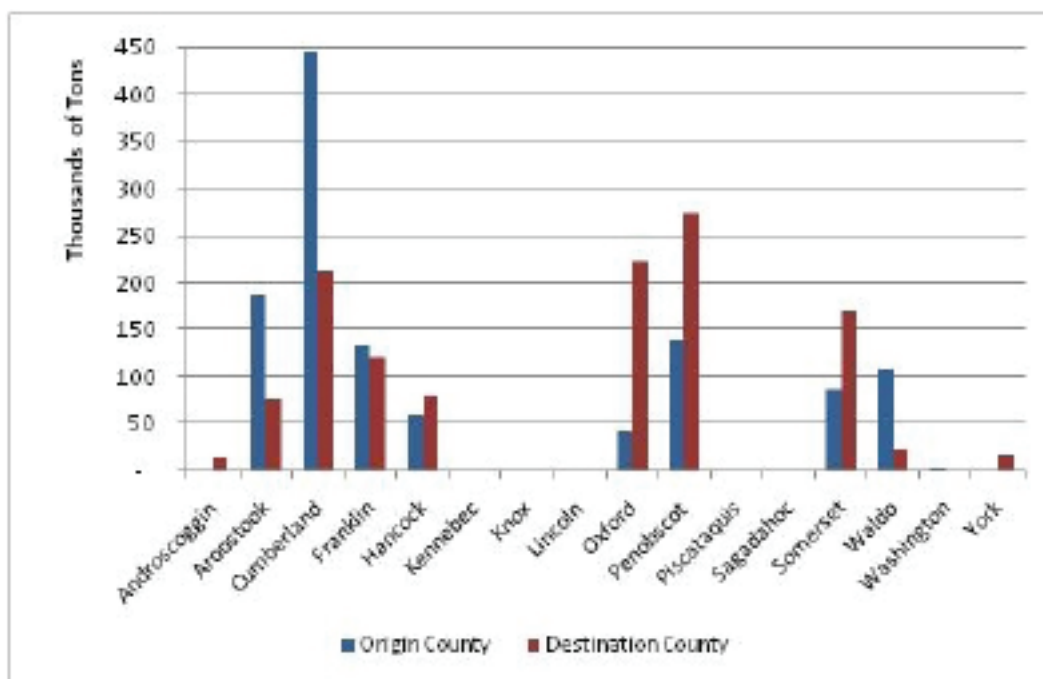
Source: STB Carload Waybill Sample 2007

4.1.3 Intrastate Traffic

Though only accounting for approximately 18 percent of total rail movements, 1.2 million tons of freight moved internally using Maine's rail system in 2007. Figure 4-10 shows the tonnage by origin and destination county within the state. Cumberland County is by far the largest origin county, accounting for approximately 447,000 tons, or 37 percent, of intrastate movements. The second largest origin within the state is Aroostook County, with 186,000 tons, or 16 percent, followed by Penobscot and Franklin Counties, with 139,000 and 133,000 tons respectively. These four counties serve as the origin of more than three-quarters of internal freight shipments in Maine. Washington County is the only county that originates rail tonnage but is not an internal rail destination.

As Figure 4-10 indicates, freight is more evenly distributed among destination counties than origin counties. No single destination county accounts for as large a percentage of freight as the origin counties. Penobscot County is the largest destination of intrastate rail movements, bringing in nearly 273,000 tons, or 23 percent in 2007. Oxford County was the second largest destination of intrastate tonnage, with nearly 223,000 tons, accounting for 19 percent of internal destination tonnage. Both Androscoggin and York Counties receive freight from elsewhere in the state via rail, though neither of them is the origin of any intrastate rail tonnage.

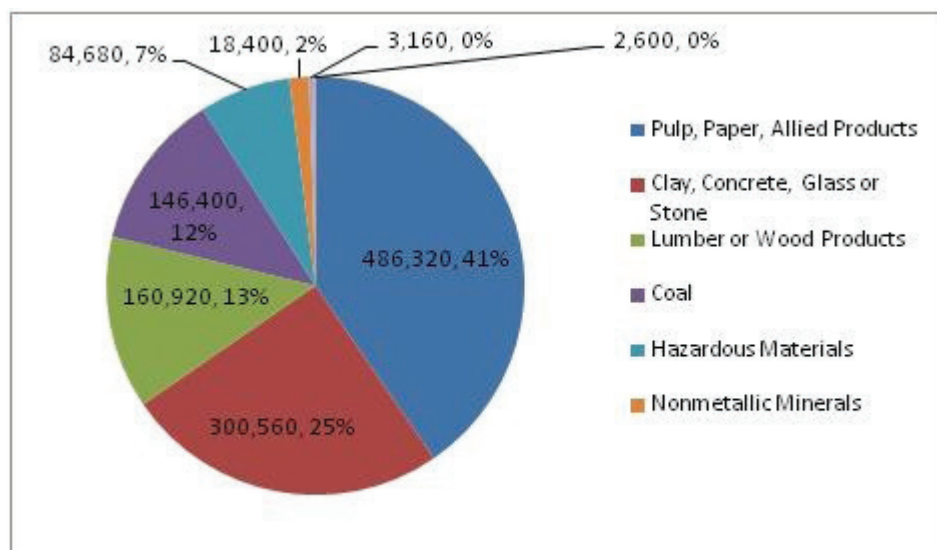
Figure 4-10: Maine Intrastate Movements by Origin and Destination County, 2007



Source: TB Carload Waybill Sample 2007

The primary commodities moved by rail within Maine are pulp, paper and forest products, and clay, concrete, glass and stone, together accounting for nearly two-thirds of all internal commodity movements, as illustrated in Figure 4-11. The largest source of pulp, paper and allied product movements is Franklin County, accounting for 132,560 tons, or 27 percent of intrastate pulp and paper product movements.

Figure 4-11: Maine Intrastate Commodity Movements, 2007



Source: STB Carload Waybill Sample 2007

Most of these commodities are destined for Hancock County, accounting for slightly more than 57 percent of the tonnage from Franklin County. Aroostook and Somerset Counties each move more than 80,000 tons of pulp, paper and allied products within the state. Together, they account for 34 percent of all intrastate origins.

The primary destinations of the intrastate pulp and paper tonnage are Cumberland and Penobscot Counties, taking in nearly 208,000 and 167,000 tons, respectively, in 2007. All 300,000 tons of the clay, concrete, glass and stone within Maine comes from Cumberland County, with destinations in Franklin, Somerset, and Oxford Counties. These counties received 120,000, 104,000 and 76,000 tons respectively. The majority of this “clay, concrete, glass and stone” is clay slurry and crushed stone that enters through the Merrill Marine Terminal in Portland and is moved within Maine via rail as well as truck. While these commodities are not native to Maine, they are counted as entering the rail system within Maine, and thus are counted as internal rail movements.

Lumber or wood products are the third largest intrastate commodity, accounting for 13 percent of movements. The primary origin of lumber and wood products is Aroostook County, moving more than 89,000 tons of the 161,000 intrastate tons, and accounting for nearly 56 percent. The other large origin is Penobscot County, transporting more than 67,000 tons, or nearly 42 percent. This is followed closely by coal, which accounts for 12 percent of internal rail shipments, all from Cumberland County to Oxford County. Again, coal is not indigenous to Maine, and is shipped to Portland for ultimate trans-loading to rail.

4.1.4 Through Traffic

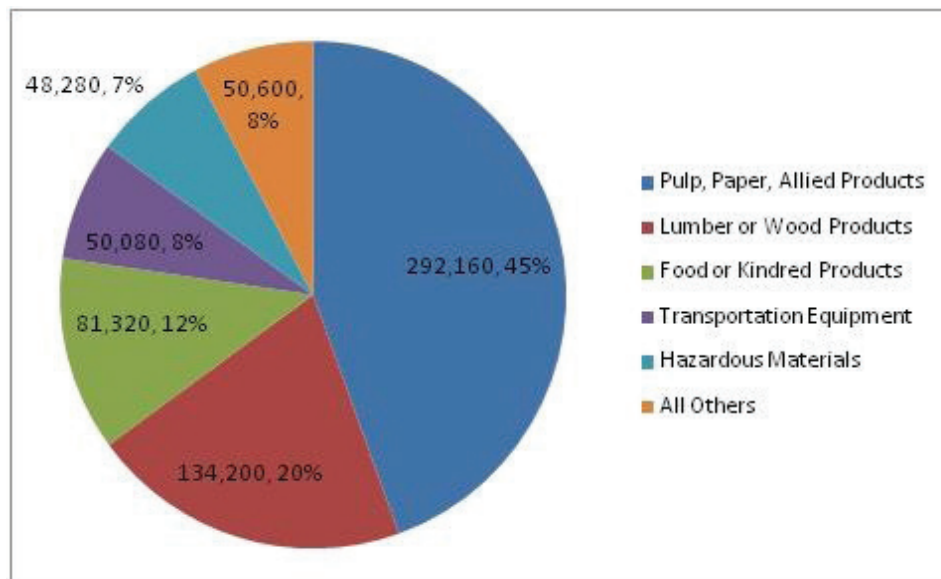
Rail traffic passing through Maine accounts for the smallest share of all traffic, only about 9.8 percent. 99.5 percent of the nearly 657,000 tons of through traffic originates in Canada. The primary origin is New Brunswick, accounting for 487,000 tons in 2007. This is not surprising since Maine is New Brunswick’s connection to the rest of the United States and provides an alternative route to Québec and the rest of Canada. Indeed, much of the Maine rail network was developed to provide this linkage between the provinces. Additionally, CN rail carries goods from the Atlantic Maritimes into the Midwest by passing around Maine to the north. Through traffic, sometimes referred to as “overhead” or “bridge” traffic, is important to Maine’s railroads inasmuch as the revenue from this traffic contributes to operations and maintenance expenses in Maine.

The destinations of freight rail traffic travelling through Maine are much more diverse than the origins, with freight coming from only ten different states or provinces, and terminating in twenty-five different states or provinces.

Massachusetts is the largest destination in terms of tonnage, with nearly 137,000 tons, or nearly 21 percent, followed by New Brunswick, with slightly less than 91,000 tons or close to 14 percent of tonnage. Nearly all through tonnage originates in Canada, except for approximately 4,000 tons of clay, concrete, glass or stone and 3,000 tons of pulp, paper or allied products originating in Maryland and approximately 3,000 tons of primary metal products originating in Virginia. These commodity shipments terminate in New Brunswick.

Figure 4-12 shows the top commodities moved through Maine by rail. Much the same as for all other traffic movements, pulp, paper, and allied products comprise the largest share of through tonnage, accounting for 45 percent of the nearly 657,000 tons. New Brunswick is the primary origin of the pulp, paper and allied products, accounting for nearly 231,000 tons, or 79 percent of movements passing through Maine.

Figure 4-12: Maine Through Traffic Commodities Share by Tonnage, 2007



Source: STB Carload Waybill Sample 2007

The primary destination of all pulp, paper and allied materials passing through Maine is Massachusetts, receiving 167,000 tons, or 57 percent. It should be noted, however, that Massachusetts may not be the ultimate destination of the products, but rather a location for transfer to another mode for further movement.

The second largest commodity passing through Maine is lumber or wood products, accounting for 20 percent of through traffic. New Brunswick accounts for almost 95 percent of the lumber and wood products passing through Maine; however, the destinations vary greatly with no state or province receiving more than 13.5 percent of the tonnage.

The third largest commodity that passes through Maine, in terms of tonnage, is food or kindred products, accounting for approximately 12 percent of total tonnage, with 66,000 tons, or 82 percent of the total, originating in New Brunswick. The largest single share of food or kindred product tonnage, 25 percent, terminates in New Jersey.

4.1.5 Maine Border Crossings

Given Maine's location and as supported by the data analysis described above, movements crossing the border to or from Canada are a very important part of trade flows for the state. The map in Figure 4-13 indicates locations of the border crossings between Maine and Canada. A 2004 study examined cross-border rail flows within the Eastern Border Crossing region and described future trends which suggest Maine will likely continue to be a net importer of Canadian goods.⁵

The Eastern Border Crossing Study reported that the Maine-New Brunswick crossings accounted for 3.5 million tons or 10 percent of the freight crossing the Eastern border, and the Maine-Quebec connection accounted for just over 470,000 tons or one percent. This 2001 data included all modes of transport, not just rail. In terms of value, these crossings accounted for two and one percent respectively, indicating that the goods transported across the border tend to be high weight, low value – such as wood or lumber.

⁵ EBTC Study of Rail Freight Crossing the Canada-U.S. Border, prepared for Eastern Border Transportation Coalition by Cambridge Systematics, November 2004.

Figure 4-13: Maine Border Crossings



Source: The Canada-United States Transportation Border Working Group

The level of rail traffic imported through Canadian Ports of Entry (POE) is greater than that being exported, according to 2008 Bureau of Transportation Statistics cross-border data. Table 4-5 indicates the value of rail imports and exports by POE. Nearly five times more freight is imported than exported through Maine.

Table 4-5: Value of Maine Rail Trade with Canada by Port of Entry, 2008

Port of Entry	Import \$	Export \$
Jackman	\$77,802,101	\$11,457,735
Vanceboro	\$43,200,797	\$5,501,508
Fort Fairfield	-	\$23,860
Van Buren	\$30,690,401	\$11,394,934
Madawaska	\$12,506	\$1,141,664
Calais	\$22,159	\$211,057
TOTAL	\$151,727,964	\$29,740,758

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, TransBorder Freight Data.

* These are not direct rail crossings, but the data includes intermodal shipments that move by both rail and truck.

4.1.6 Rail Carriers Engaged in Maine Traffic Flows

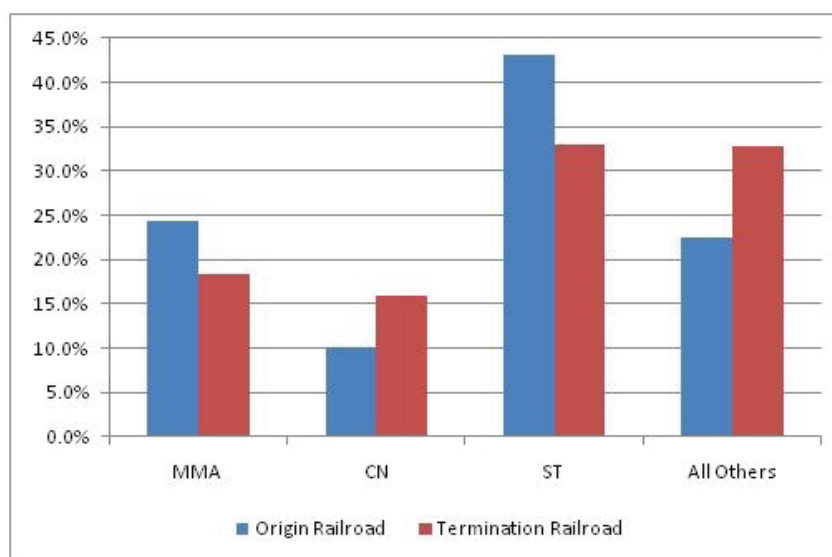
The lines of 27 different rail carriers are utilized to move rail freight to and from Maine. While most of these railroads are not located in Maine the freight either has an origin or a destination on one of these 27 rail carriers.

Figure 4-14 shows the tonnage over each of the three major origin and destination railroads for freight that traveled on Maine's rail network in 2007.

Three rail lines carried 74 percent of all tonnage and 75 percent of all carloads in Maine. Pan Am Railways, referenced as ST in the figure, was the largest origin rail carrier, with 43 percent of tonnage and 40 percent of carloads. This was followed by the Montreal, Maine and Atlantic (MM&A) with 24 percent of tonnage and 27 percent of rail cars and Canadian National (CN) with 10 percent of tonnage and 13 percent of carloads. All of this traffic passed through Maine at some point, whether it originated, terminated, traveled internally, or passed through the state.

Five rail carriers, PAR, MM&A, CN, CSX, and Norfolk Southern Railway System (NS), accounted for 92 percent of tonnage and 93 percent of carloads that terminated in Maine in 2007.⁶ Those not explicitly depicted in Figure 4-14 below are included in the “All Others” category, along with BNSF Railway Company (BNSF), CP Rail System (CPRS), Vermont Railway (VTR) and others. ST accounted for the largest proportion, 33 percent of tonnage and 29 percent of carloads.

Figure 4-14: Share of All Maine Rail Tonnage by Origin and Destination Railroad



Source: STB Carload Waybill Sample 2007

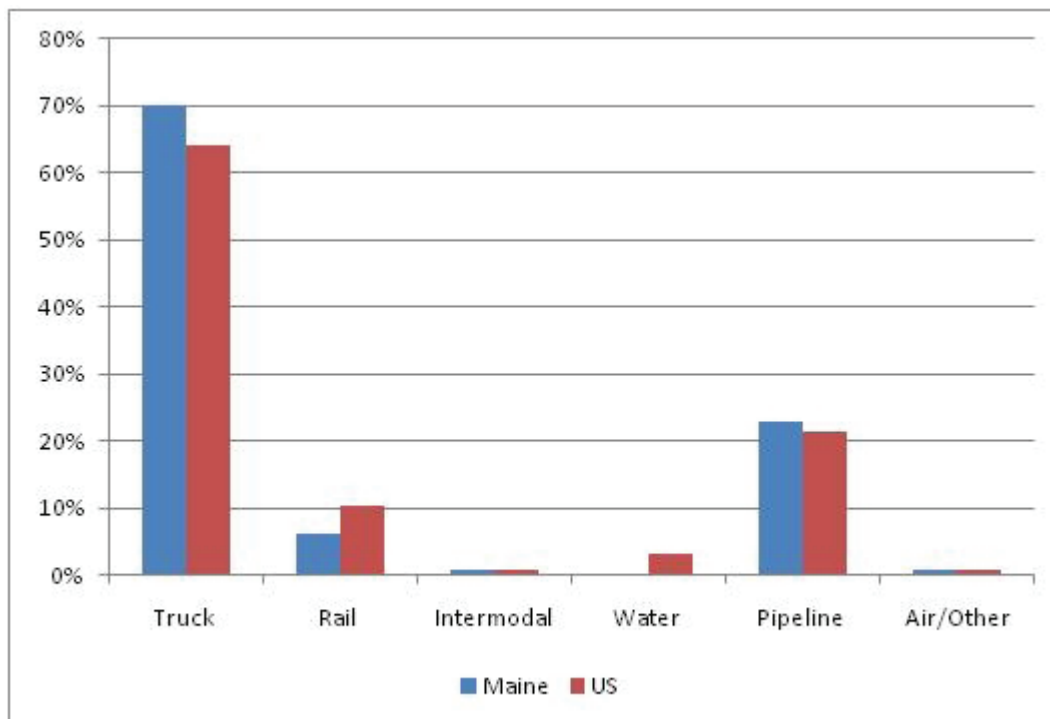
4.2 Modal Comparison

An understanding of the modes utilized to transport freight in Maine, as well as the modal share of this goods movement, is important to evaluate the current and future role of freight rail in the state. This section reviews goods movement in Maine via multiple modes and focuses on originating and terminating freight flows. The primary data source for this analysis is the Federal Highway Administration's Freight Analysis Framework (FAF²). The FAF data is publicly available with geographic coverage of states and major metropolitan areas. It provides modally disaggregated data for both tonnage and value. However, it does not cover through-trips.

⁶ STB waybill sample data includes data from rail roads that do not directly serve in Maine, but rather provide connectivity to the national system.

In 2007 more than 99 million tons of originating, terminating, and intrastate freight was transported on Maine infrastructure.⁷ Figure 4-15 shows the modal breakdown of these shipments by tonnage. Truck shipments represent the largest share for both Maine and the nation. In fact, Maine's share of truck shipments is more than five percentage points higher than the U.S. share. In contrast, Maine has a smaller portion of freight shipments transported via rail than the nation as a whole. This means that Maine is less dependent upon rail shipments for tonnage than the nation (a difference of 4.2 percentage points). Between 1997 and 2007, rail utilization in Maine increased from carrying 4 percent of all freight tonnage to 6 percent.

Figure 4-15: Share of Total Freight Shipments by Mode and Tonnage: United States and Maine, 2007

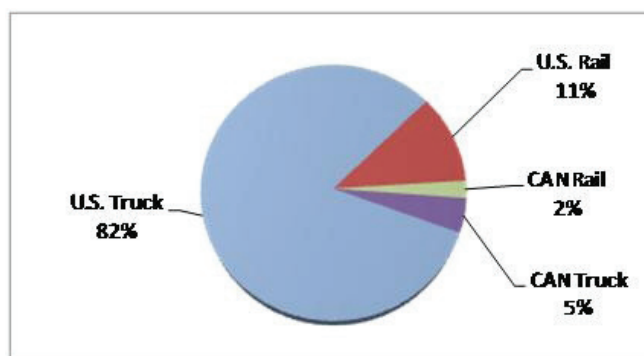


Source: FHWA's Freight Analysis Framework (FAF²)

4.2.1 Maine Originating Freight

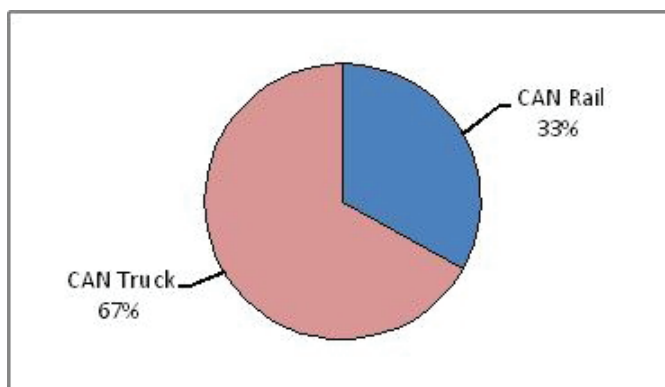
When considering exports to other states in the U.S. and provinces in Canada, the vast majority of Maine's exports, 82 percent, are transported via truck to other U.S. states. Figure 4-16. Rail shipments from Maine exported to other U.S. states represent 11 percent of total shipments with 2 percent flowing to Canada.

⁷ Note that there is a slight difference between the FHWA FAF2 data and the STB Carload Waybill Sample in terms of the volume of tonnage. This difference is very slight and can be explained by the lack of through traffic in the FAF2 data.

Figure 4-16: Maine Exports to U.S. and Canada (19.77M tons)

Source: STB Waybill sample 2007 & FHWA FAF

There are twenty-three U.S.-Canada truck border crossings connecting Canada to New England states. Eleven of these crossings are major trucking gateways; combined, they handle over 5 million heavy trucks (or 43 percent of the total truck border crossings) annually. Canada is one of Maine's largest trading partners (5th highest) with more than 1.29 million tons of commodities shipped across the border to various provinces. An estimated 865,000 tons, or 67 percent of these commodities were shipped via truck, and 430,000 tons were shipped via rail to Canada Figure 4-17.

Figure 4:17: Maine Exports to Canada (1.29M tons)

Source: STB Waybill sample 2007 & FHWA FAF

Wood products, lumber, paper, pulp, and paper articles represent nearly three-quarters of the commodities exported from Maine by truck Table 4-6. Food/agricultural products, minerals, vehicles and metals represent the next largest percent of total exports transported by truck. The remaining commodities are categorized as mixed freight or "other commodities" and represent 9 percent of the total.

Table 4-6: Maine Origin to Canada (Truck)

Commodity	Tons	% of Total
Wood products	421,560	48.7%
Paper articles	137,460	15.9%
Newsprint/paper	87,950	10.2%
Meat/seafood	45,360	5.2%
Other ag products	25,170	3.0%
Motorized vehicles	17,050	2.0%
Nonmetallic minerals	14,870	1.7%
Base metals	13,020	1.5%
Cereal grains	11,640	1.3%
Nonmetal min. products	10,480	1.2%
Other commodities	79,730	9.2%
TOTAL	865,210	100%

Source: FHWA FAF

Rail shipments to Canada are roughly half of truck shipments by weight, suggesting the potential for diversion to rail.⁸ As shown in Table 4-7 below, wood and paper products represent a significant percentage of Maine's rail exports (more than 90 percent), further indicating that diversion to rail, of these commodities in particular, may be viable.

Table 4-7: Maine Origin to Canada (Rail)

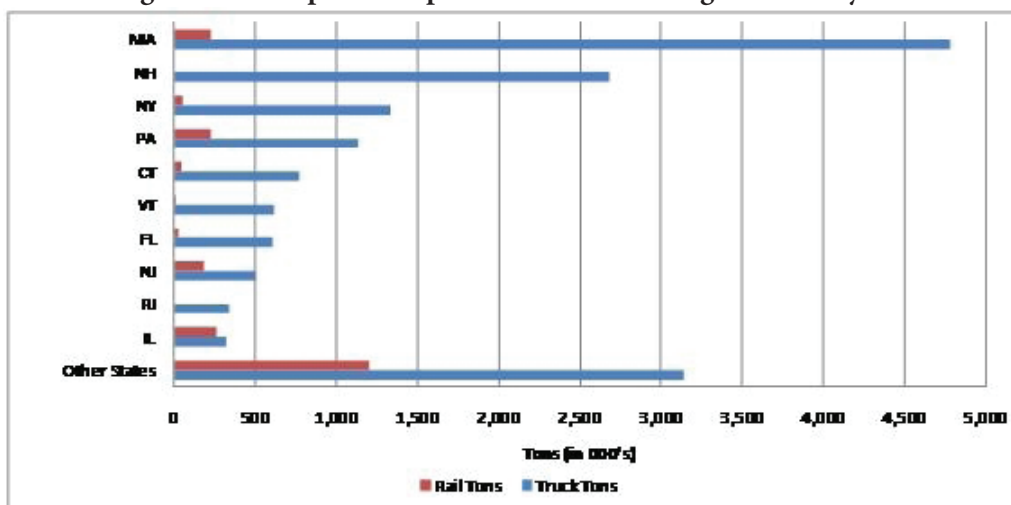
Commodity	Tons	% of Total
Lumber/wood prod's. (excl. furniture)	360,240	83.7%
Pulp, paper, or allied products	41,120	9.6%
Farm products	14,920	3.5%
Transportation equipment	4,960	1.2%
Clay, concrete, glass, or stone products	3,960	0.9%
Waste or scrap materials	3,760	0.9%
Freight all kinds	1,000	0.2%
Textile mill products	240	0.1%
TOTAL	430,200	100%

Source: STB Waybill sample 2007

Figure 4-18 shows the ranking of states by volume of exports purchased, with truck shipments currently the preferred mode of shipment. MA, NH, and NY originate large amounts of base metals, basic/mixed chemicals, food stuffs, and wood products.

⁸ Dependent on motivating incentives from reduction in shipment costs price and/or supply chain improvements (e.g. lead-time reduction and increased reliability).

Figure 4-18: Exports - Top United States Trading Partners by Mode



Source: STB Waybill sample 2007 & FHWA FAF

For destinations in the United States, wood, newsprint, lumber, pulp, and paper product (all greater than 1 million tons) represent 30 percent of all truck shipments and approximately 97 percent of all rail shipments, as shown in Table 4-8 and Table 4-9. Agricultural, farm and food, and waste/scrap products represent the next largest category of exports. “Other Commodities” make up the remainder. The commodity mix being transported by truck out of the State of Maine is not dissimilar to the mix being moved by rail. As was the case with Canadian exports, this suggests an opportunity to divert some tonnage for certain commodities from truck transport to rail.

Table 4-8: Maine Origin to U.S. (Truck)

Commodity	Tons	% of Total
Wood prods.	2,940,010	18%
Newsprint/paper	1,855,940	11%
Other forest products	1,520,090	9%
Mixed freight	1,117,670	7%
Other ag. prods.	871,560	5%
Waste/scrap	864,540	5%
Unknown	819,270	5%
Chemical prods.	647,090	4%
Logs	574,540	4%
Nonmetal. min. prods.	532,210	3%
Other Commodities	4497,850	28%
TOTAL	16,240,370	100%

Source: FHWA FAF

Table 4-9: Maine Origin to U.S. (Rail)

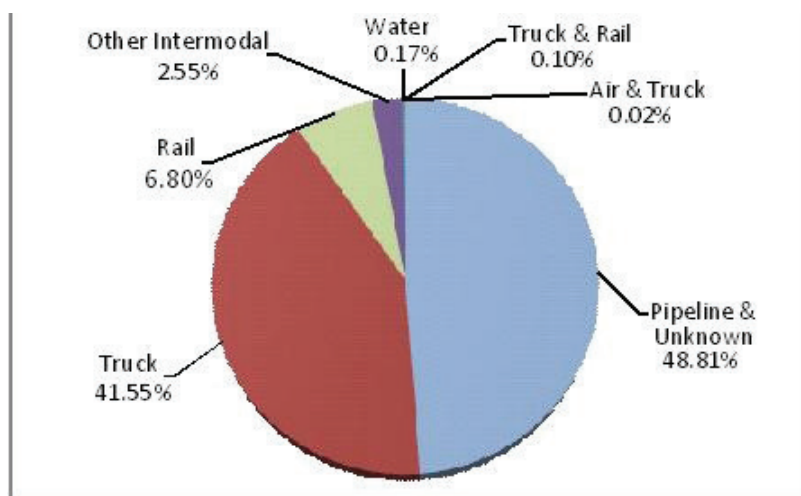
Commodity	Tons	% of Total
Pulp, paper, or allied products	1,970,440	88.1%
Lumber/wood products (excl. furniture)	193,540	8.7%
Waste or scrap materials	40,080	1.8%
Farm products	13,400	0.6%
Food products	6,400	0.3%
Clay, concrete, glass, or stone products	4,800	0.2%
Transportation equipment	4,160	0.2%
Chemicals or allied products	3,280	0.1%
Empty containers, carriers or devices	180	0.0%
TOTAL	2,236,680	100%

Source: STB Waybill sample 2007

4.2.2 Maine Terminating Freight

The most significant mode of transport in Maine for importing commodities is pipelines, comprising slightly less than half of Maine's total imports Figure 4-19. Truck, rail, intermodal, and water combined represent most of the remaining modal share of imports to the state.⁹

Figure 4 -19: Imports to Maine by Mode (32.4M Metric tons) – 2007

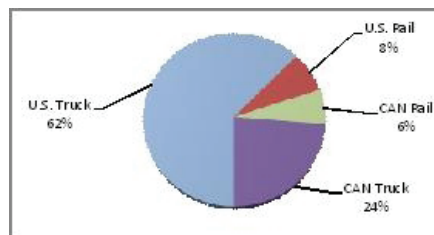


Source: STB Waybill sample 2007 & FHWA FAF

When comparing truck and rail imports from Canada and other states, most commodity volume transported into Maine is carried by trucks. Only 14 percent of commodity imports from Canada and U.S. states is transported via rail.

⁹ Pipeline and Unknown- Pipeline is included with unknown because region-to-region flows by pipeline are subject to significant uncertainty. http://ops.fhwa.dot.gov/freight/freight_analysis/faf/fa2userguide/index.htm

Figure 4-20: Maine Imports from U.S. and Canada by Mode (15.67M tons)



Source: STB Waybill sample 2007 & FHWA FAF

Maine imports 32.4 million tons of commodities by a variety of transportation modes, as reflected in Figure 4-20. Gasoline represents 42 percent of all tonnage transported via truck from Canada. Coal-n.e.c. and nonmetallic minerals comprise another 22 percent of imports from this country as shown in Table 4-10.

Table 4-10: Maine Destined Commodities from Canada (Truck)

Commodity	Tons	% of Total
Gasoline	1,548,690	42%
Coal n.e.c.	423,000	11%
Nonmetallic minerals	399,350	11%
Wood prods.	267,760	7%
Newsprint/paper	153,230	4%
Paper articles	142,770	4%
Basic chemicals	126,730	3%
Chemical prods.	104,680	3%
Other foodstuffs	77,980	1%
Nonmetal min. prods.	74,900	2%
Other Commodities	384,570	10%
TOTAL	3,707,680	100%

Source: FHWA FAF

As indicated in Table 4-11, rail transported commodities from Canada are less diverse than those transported by truck. Eighty-three percent of all rail imports from Canada are pulp, paper and hazardous materials.¹⁰ The remaining commodities include lumber/wood products, chemicals, food and other commodities.

¹⁰ Hazardous materials include products that contain toxic or hazardous components, such as industrial chemicals, electronic and refrigeration equipment. Many of these products are used by the paper industry and by municipal water treatment facilities, for example.

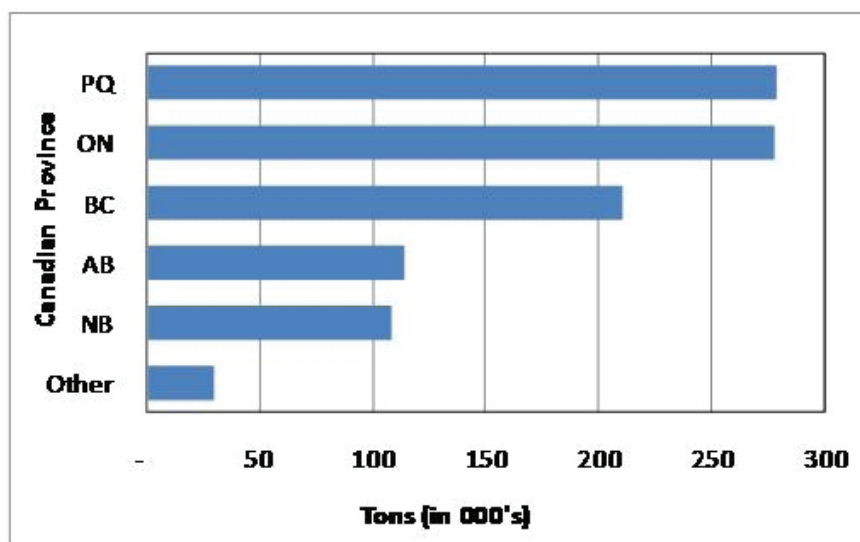
Table 4-11: Maine Destination from Canada (Rail)

Commodity	Tons	% of Total
Pulp, Paper, or Allied Products	443,240	43%
Hazardous Materials	409,160	40%
Lumber or Wood Prod. excl. Furniture	57,160	6%
Chemicals or Allied Products	50,720	5%
Freight All Kinds	28,000	3%
Food or Kindred Products	22,200	2%
Other Commodities	9,120	1%
TOTAL	1,019,600	100%

Source: STB Waybill sample 2007 & FHWA FAF

STB Waybill sample data was used to determine the province of origin for Canadian rail shipments. As shown in Figure 4-21, the majority of rail shipments came from Quebec (PQ), Ontario (ON) and British Columbia (BC).

Figure 4-21: Imports to Maine from Canada by Rail – by Province of Origin



Source: STB Waybill sample 2007 & FHWA FAF

Imported goods shipped by truck from other U.S. states to Maine are very diverse, with more than 49 percent of all volume classified as other commodities Table 4-12. Other commodities include fuel oils, metals, and wood/logs, representing 21 percent of trucked imports. Non-metallic minerals, manufacturing, and food stuffs represent 14 percent of commodities transported from other states.

Table 4-12: Maine Destined Commodities from U.S. (Truck)

Commodity	Tons	% of Total
Fuel oils	749,130	8%
Base metals	703,270	7%
Logs	618,310	6%
Nonmetallic minerals	306,810	3%
Other foodstuffs	483,060	5%
Misc. mfg. prods.	386,640	4%
Chemical prods.	386,040	4%
Wood prods.	374,710	4%
Natural sands	365,450	4%
Coal-n.e.c.	357,400	4%
Other Commodities	4,527,940	49%
TOTAL	9,758,760	100%

Source: FHWA FAF

As presented in Table 4-13, 33 percent of rail imports from other U.S. states into Maine are clay, concrete, glass, or stone products. Another 15 percent of imports are chemicals or allied products. Most of these commodities are utilized by the paper industry.

Table 4-13: Maine Destined Commodities from U.S. (Rail)

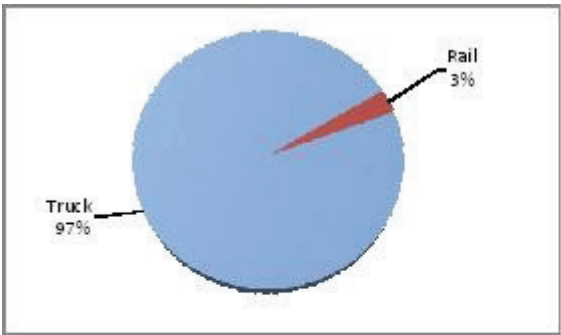
Commodity	Tons	% of Total
Clay, Concrete, Glass, or Stone Products	393,960	33%
Chemicals or Allied Products	176,680	15%
Food or Kindred Products	169,648	14%
Farm Products	126,696	11%
Lumber or Wood Products, excl. Furniture	104,850	9%
Hazardous Materials	80,640	7%
Pulp, Paper, or Allied Products	73,030	6%
Other Commodities	33,768	5%
TOTAL	1,185,192	100%

Source: STB Waybill sample 2007 & FHWA FAF

4.2.3 Maine Intrastate Traffic

The primary rail corridors within Maine follow a north/south and east/west orientation with the majority of internal freight (97 percent) being shipped via truck as shown in Figure 4-22. Only three percent of Maine's internal shipments travel by rail.

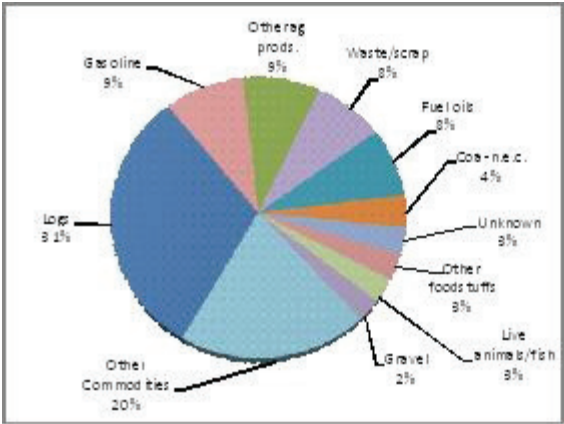
Figure 4-22: Maine Internal Shipments by Truck and Rail



Source: STB Waybill Sample 2007 & FHWA FAF

Truck shipments are diversified between logs, gasoline/fuel/coal, food/agricultural products, and other commodities Figure 4-23. For truck shipments within Maine, logs represent 31 percent of total tonnage.

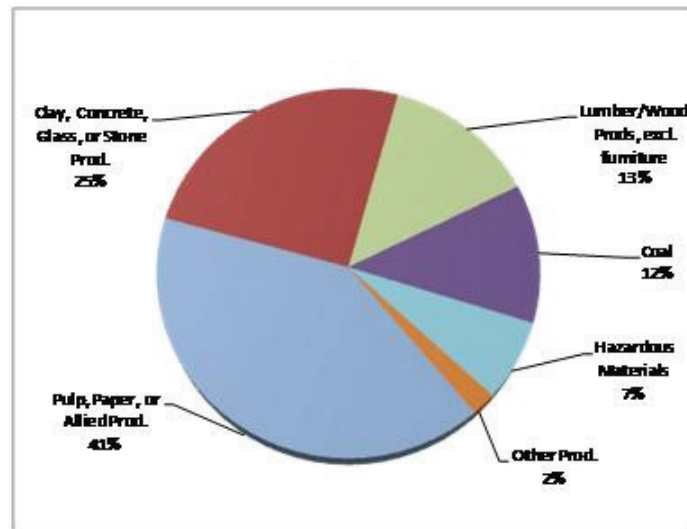
Figure 4-23: Maine Truck Internal Shipments - 38.7 Million Tons



Source: FHWA FAF

Internal rail shipments are concentrated primarily in paper/pulp/wood, with 41 percent of total tonnage attributable to these commodities. Twenty-five percent of total internal tons shipped by rail are related to clay, concrete, glass or stone products. Coal and hazardous materials represent another 19 percent, as shown in Figure 4-24.

Figure 4-24: Maine Rail Internal Shipments - 1.2 Million Tons



Source: STB Waybill Sample 2007

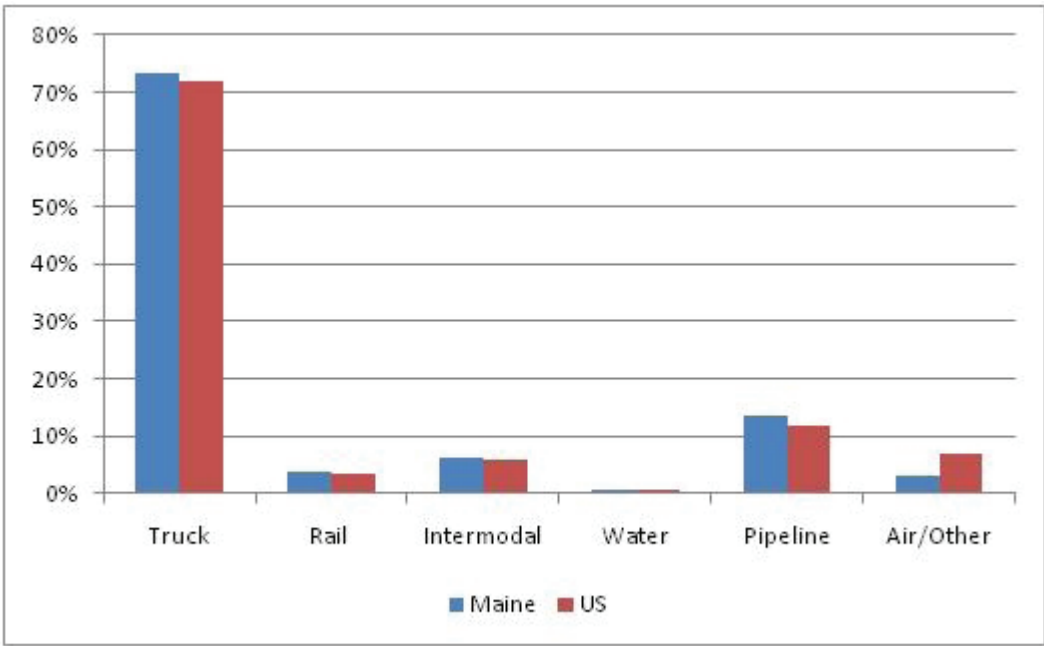
4.3 Value of Freight

The value of freight traveling on Maine infrastructure, excluding through traffic, is 0.52 percent of the total freight value moving in the United States. Similarly, the total tonnage shipped in Maine represents 0.47 percent of the national tons shipped.

Figure 4-25 shows the modal share in terms of commodity value for Maine and the United States. When modal shares are evaluated based on the value of the goods shipped, trucks represent a significantly higher percent of total value than any other mode. Seventy-two percent of all freight value in Maine is shipped by truck. This is slightly lower than the U.S. average.

Commodities moving by modes such as air freight and intermodal tend to have a higher value-to-weight ratio. For example, air shipments in Maine carry 3.2 percent of the total freight value but only 0.7 percent of the total freight tonnage. For rail, the inverse is true; rail tends to ship heavier bulk lower value commodities.

Figure 4-25: Share of Total Freight Shipments by Mode and Value: United States and Maine, 2007

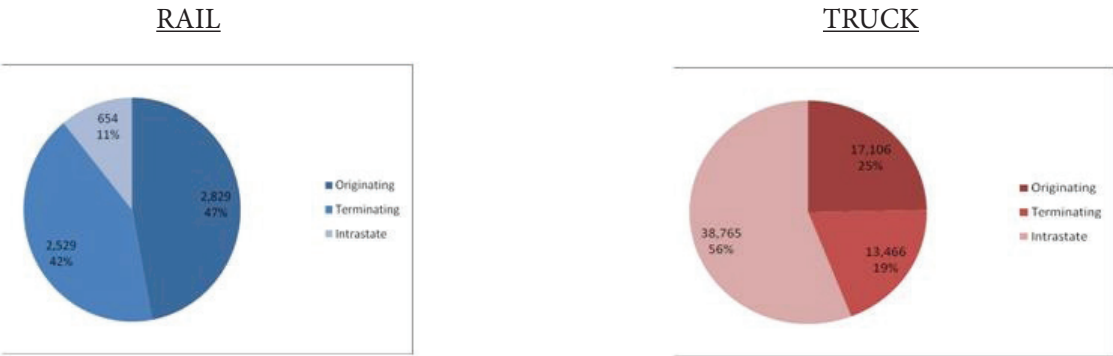


Source: FHWA's Freight Analysis Framework (FAF2)

Shipments terminating in Maine using all modes total 32 million tons, followed by 22 million originating tons. The largest movement of freight is internal to Maine, primarily moved by truck, and accounting for more than 43 million tons.

Figure 4-26 shows that 47 percent of all rail shipments in Maine are outbound. Inbound shipments represent 42 percent of all freight shipped by rail in Maine. Not surprisingly, truck shipments are primarily within Maine, representing 56 percent of all truck shipments in the state.

Figure 4-26: Maine Freight Shipments in Thousands of Tons by Direction: Rail and Truck, 2007



Source: FHWA's Freight Analysis Framework (FAF2)

In terms of modal comparison of commodities, Table 4-14 and Table 4-15 show the top commodities that originate in Maine. Regardless of whether the top commodities are ranked by value or tonnage, the top rail movements originating in Maine are related to the paper industry. The arrows between the values and tonnages indicate the link between the commodities. There is more overlap in terms of tonnage and value for rail commodities than truck commodities, with twelve of the top fifteen commodities being the same for rail. Only eight of the top commodities are the same for truck. This indicates a possible difference in the value to weight ratio of the goods being transported by each mode.

When considering value, several of the top commodities originating in Maine and being moved by truck are time sensitive. Because of this, these commodities are not likely to be divertible to rail. However, there are some common commodities moving by both truck and rail out of the state. Wood products, newsprint and chemical products are transported using both modes. While there may be the potential to divert some of these commodities from truck to rail, this can occur if the proper conditions are met. For example, the source of the commodity must have access a rail line.

Table 4-14: Origin Rail Top 15 Commodities by Value and Weight

Commodity	Mt\$	Commodity	Thous Tons
Newsprint/paper	\$ 1,324.58	Newsprint/paper	1,835.98
Wood prod.	\$ 555.11	Wood prod.	712.25
Chemical prod.	\$ 128.78	Chemical prod.	286.90
Electronics	\$ 48.27	Nonmetallic min. prod.	46.79
Paper articles	\$ 25.99	Paper articles	38.22
Motorized vehicle	\$ 5.75	Cereal grains	4.68
Textiles/leather	\$ 3.83	Electronics	1.77
Nonmetallic min. prod.	\$ 0.89	Basic chemicals	0.84
Cereal grains	\$ 0.54	Metallic ores	0.84
Printed prod.	\$ 0.48	Basic metals	0.39
Basic chemicals	\$ 0.24	Textiles/leather	0.25
Furniture	\$ 0.23	Fertilizers	0.25
Plastics/rubber	\$ 0.20	Plastics/rubber	0.15
Articles-base metal	\$ 0.14	Printed prod.	0.15
Nonmetal min. prod.	\$ 0.14	Nonmetal min. prod.	0.12

Source: FHWA's Freight Analysis Framework (FAF2) (includes Canada)

Table 4-15: Origin Truck Top 15 Commodities by Value and Weight

Commodity	Mt\$	Commodity	Thous Tons
Mixed freight	\$ 4,532.00	Wood prod.	3,361.57
Machinery	\$ 3,249.32	Newsprint/paper	1,943.89
Textiles/leather	\$ 1,685.36	Other foodstuffs	1,527.89
Newsprint/paper	\$ 1,525.69	Mixed freight	1,118.48
Chemical prod.	\$ 1,417.32	Other ag prod.	892.49
Meat/seafood	\$ 1,185.53	Waste/scrap	864.54
Wood prod.	\$ 1,001.77	Unknown	819.27
Misc. infg. prod.	\$ 927.66	Chemical prod.	651.98
Unknown	\$ 785.24	Logs	574.55
Other foodstuffs	\$ 734.75	Nonmetal min. prod.	542.69
Paper articles	\$ 685.90	Gravel	499.54
Electronics	\$ 665.94	Gasoline	430.50
Furniture	\$ 596.51	Paper articles	372.86
Printed prod.	\$ 520.98	Machinery	371.10
Plastics/rubber	\$ 500.97	Basic chemicals	278.49

Source: FHWA's Freight Analysis Framework (FAF2) (includes Canada)

Table 4-16 and Table 4-17 indicate the top rail and truck commodities terminating in Maine by value and weight. Much like freight originating in Maine, there is more commonality between the top commodities by value and weight among rail shipments than among truck shipments. Eleven of the top fifteen rail commodities are the same, regardless of whether they are ranked by value or weight. Only six of the top commodities transported by truck and terminating in Maine are the same. As was the case with commodities originating in the state, the primary commodities terminating in Maine are related to paper production. Coal and agricultural based products are also in the top 15 based on value or weight for both truck and rail.

The commodities moved by truck into the state tend to be more high value, specialized goods than those moved by rail. For example, pharmaceuticals, machinery and agricultural products, which are typically more time-sensitive than other products, are better moved by truck. Similar to commodities originating in Maine, there is some potential for diversion. Commodities such as wood products and chemical products are shipped by both rail and truck. These types of goods could be diverted to rail if the right conditions exist.

Table 4-16: Destination Rail Top 15 Commodities by Value and Weight

Commodity	MB\$		Commodity	Thousands
Newsprint/paper	\$ 161.41		Nonmetallic minerals	591.40
Plastics/rubber	\$ 110.11		Coal	427.38
Motorized vehicles	\$ 101.58		Newsprint/paper	330.28
Wood prods.	\$ 54.50		Coal-n.e.c.	310.76
Coal-n.e.c.	\$ 50.56		Basic chemicals	227.42
Milled grain prods.	\$ 48.94		Wood prods.	222.47
Basic chemicals	\$ 42.96		Milled grain prods.	92.08
Chemical prods.	\$ 33.76		Gravel	84.72
Paper articles	\$ 19.99		Plastics/rubber	75.77
Other foodstuffs	\$ 13.38		Paper articles	34.98
Nonmetallic minerals	\$ 9.05		Other ag prods.	30.65
Other ag prods.	\$ 6.77		Other foodstuffs	26.59
Alcoholic beverages	\$ 4.66		Cereal grains	24.09
Gravel	\$ 4.95		Animal feed	14.96
Base metals	\$ 3.82		Misc. mfg. prods.	11.93

Source: FHWA's Freight Analysis Framework (FAF2) (includes Canada)

Table 4-17: Destination Truck Top 15 Commodities by Value and Weight

Commodity	Mt\$	Commodity	Thous. Tons
Machinery	\$ 2,771.04	Gasoline	1,812.47
Motorized vehicles	\$ 1,793.82	Nonmetallic minerals	906.16
Mixed freight	\$ 1,451.50	Coal-n.e.c.	782.40
Milled grain prods.	\$ 935.49	Fuel oils	749.13
Printed prods.	\$ 932.69	Base metals	718.15
Textiles/leather	\$ 841.30	Wood prods.	642.47
Pharmaceuticals	\$ 826.10	Logs	618.94
Misc. mfg. prods.	\$ 695.90	Other foodstuffs	561.05
Other foodstuffs	\$ 604.07	Chemical prods.	490.73
Chemical prods.	\$ 560.30	Natural sands	422.75
Plastics/rubber	\$ 493.57	Misc. mfg. prods.	387.97
Animal feed	\$ 425.20	Nonmetal min. prods.	381.63
Wood prods.	\$ 382.12	Mixed freight	372.49
Articles base metal	\$ 379.25	Waste/scrap	356.32
Other ag prods.	\$ 377.32	Milled grain prods.	352.21

Source: FHWA's Freight Analysis Framework (FAF2) (includes Canada)

Table 4-18 and Table 4-19 show the common aggregate commodities and the average value to weight ratio between truck and rail. Although the value to weight ratio shows that trucks typically carry goods with a higher value to weight ratio, these commodities have the potential for freight diversion. Milled grain products and wood products being imported into Maine may be suitable for diversion because their transport typically is less time sensitive. Chemicals and paper products originating in Maine and being shipped outside the state may also be reasonable targets for diversion from truck to rail.

Table 4-18: Destination Value to Weight Ratio for Truck and Rail

Commodity	Truck	Rail
Milled grain products	\$2,606	\$531
Other goods, alls	\$ 577	\$503
Wood products	\$595	\$245

Source: HDR

Table 4-19: Origin Value to Weight Ratio for Truck and Rail

Commodity	Truck	Rail
Chemical products	\$1,121	\$690
Newspaper/paper	\$765	\$722
Paper articles	\$1,840	\$670
Wood products	\$298	\$779

Source: HDR

4.4 *Demographic Drivers*

4.4.1 Population

Population growth leads to increasing demand for consumer goods and consequently demand for freight transportation needed to supply these goods. Increases in population also drive growth in both residential and commercial construction followed by growth in retail, services, and other businesses. To support this additional economic activity, logistical distribution networks need to be expanded by improving the connections between warehouses and retail centers and other customer outlets. Increases in personal and commuting traffic driven by population growth also trigger the demand for passenger transportation services to alleviate congestion and connect a growing labor force to centers of employment. Because trucking shares the highway with autos, diverting truck-borne freight to rail, where financially feasible, can help to reduce highway congestion and thereby reduce the need for investments in highway capacity.

The changing industrial mix in Maine – from a resource/extractive base to a more service and high-end manufacturing base – will also change the location and intensity of goods movement and commute patterns in the state. Each of these factors has an important role to play in planning Maine’s transportation system, and is especially significant in deciding how to provide for the future of rail system capacity and operations.

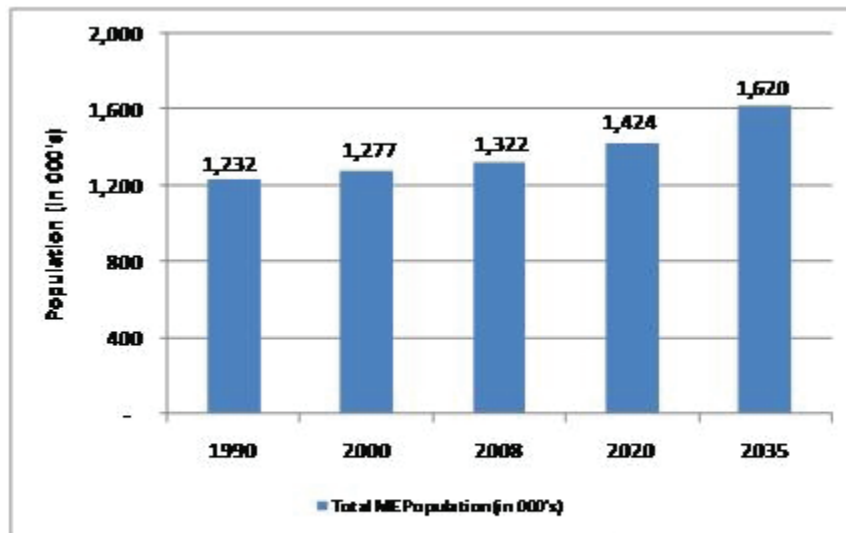
Maine is ranked as the 40th most populated state by the U.S. Census (2006-2008) with a population estimated at 1.3 million residents.¹¹ Between 1990 and 2008, Maine’s population increased 7.2 percent from 1.2 million to 1.3 million (an average annual growth rate of 0.4 percent), which is significantly lower than the overall national population growth of 21.3 percent (average annual growth rate of 1.08 percent) for the same time period. Maine is forecasted to continue a pattern of relatively low average annual growth from 2008 to 2035 with an average annual growth rate of 0.73 percent per year Figure 4-27.¹²

Although Maine’s population is not expected to grow rapidly, the difference in county-level growth will result in changes in the relative population concentration. These changes – with more concentrated populations in coastal regions – means that freight services will need to respond to these new patterns. At the same time, it is likely that transportation costs will increase due to the increased costs of fossil fuels, and other cost pressures on the supply chains linking Maine to the rest of the United States. This will require that Maine’s transportation networks continue to be improved so that the needs of current and future populations can be served as efficiently and cost-effectively as possible.

11 2006-2008 American Community Survey. U.S. Census. New 2010 Statewide Decennial Census population counts will begin to be released in December 2010. County-level counts will be released in early 2011. The 2000-2009 ACS estimates were released on December 14, 2010.

12 Demographic forecasts used in this report were developed by the Muskie School of Public Service at the Southern Maine University. The forecast US population average annual growth rate for the period from 2008 to 2035 is expected to be approximately 0.8%.

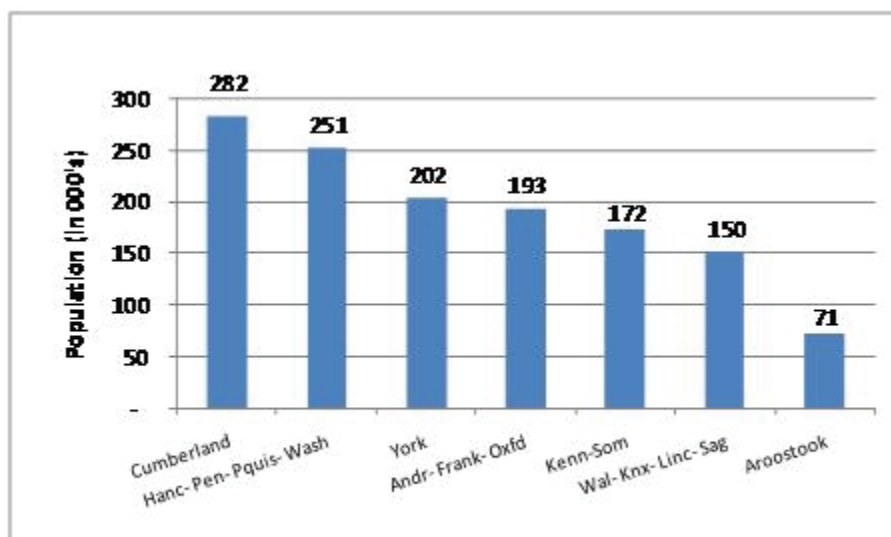
Figure 4-27: Maine Population Forecast, 2008 to 2035



Source: Southern Maine University- Muskie School of Public Service¹³

With 282,000 people, Cumberland County (which includes Portland - the largest city in the state) has the largest population of the 16 counties in Maine with 21 percent of the states' population. Aroostook County is the least populated county with 71,000 residents, representing 5 percent of the total state population Figure 4-28.

Figure 4-28: Maine Population Forecast by Counties, 2008

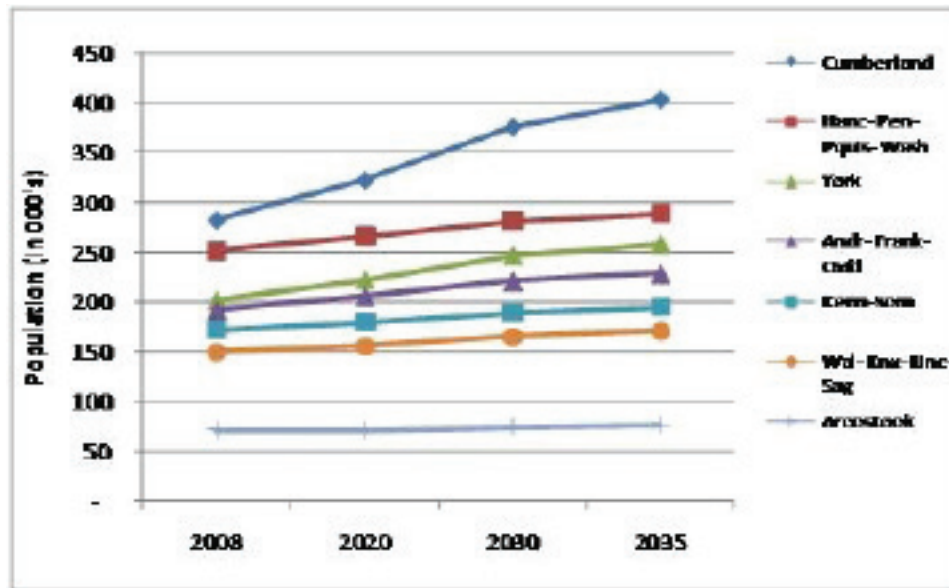


Source: Southern Maine University- Muskie School of Public Service

¹³ County and county groups provided in this report are based on forecasts from the Southern Maine University's Muskie School of Public Service (SMU). Forecasts for certain counties have been grouped together by SMU for forecasting purposes because of their small size. Individual county-level forecasts for these smaller counties were not available.

All counties are projected to grow in the future, with Cumberland County expected to increase its population by over 121,000 residents by 2035, the largest forecasted growth (an average annual rate of 1.3 percent) of any county/ region in the state Figure 4-29. The slowest, Aroostook County, is forecast to grow the least, at 0.26 percent.

Figure 4-29: Main Population Forecast by County, 2008 to 2035

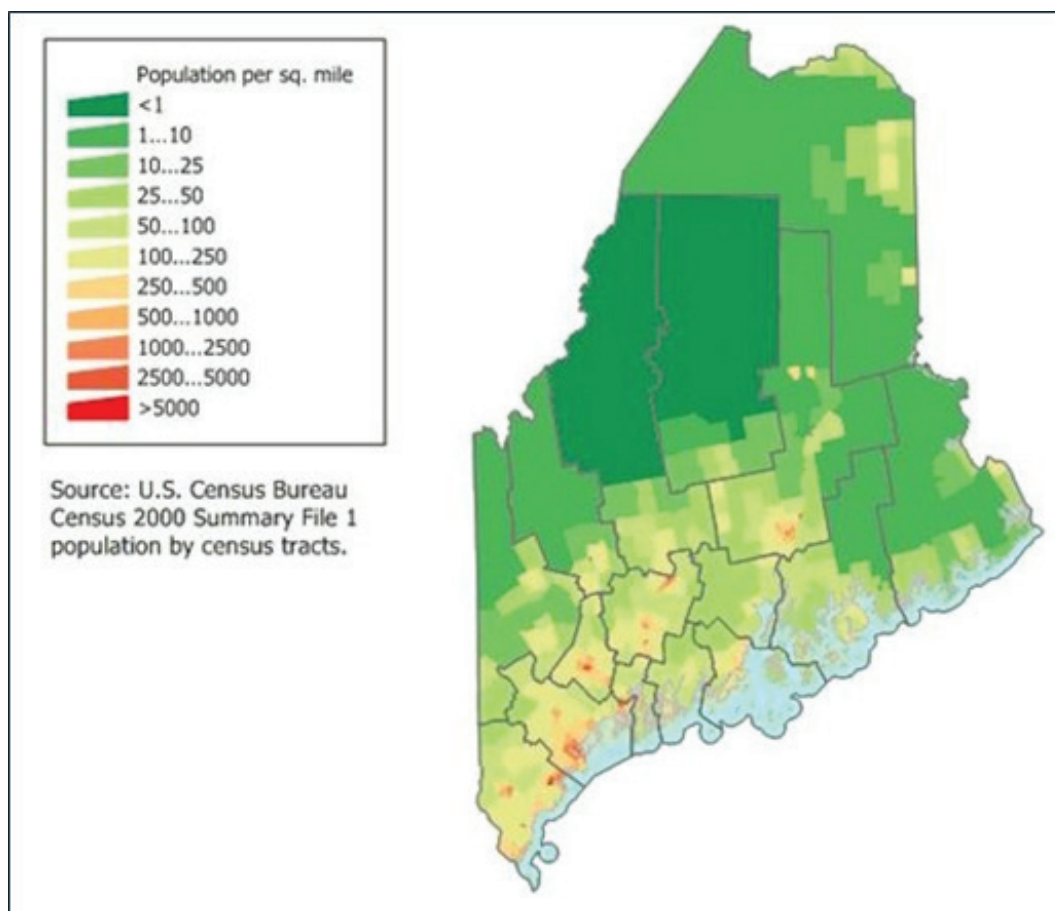


Source: Southern Maine University- Muskie School of Public Service

Freight density is an important element in corridor evaluation since higher volumes of freight moving through a corridor increase the demand for logistics support services and greater need for increased freight capacity. Large population centers provide these freight densities. Maine counties with larger populations and higher than average growth rates offer the best long-term opportunities to support investments in freight infrastructure. Trends in logistics management suggest that greater multimodal access and the presence of intermodal (rail/truck) facilities provides more opportunities for supporting the efficiencies needed to sustain cost-effective logistics operations.

Increased levels of freight traffic also result in more carrier and price competition which benefits shippers and receivers, and ultimately consumers. Figure 4-30 illustrates population density in Maine which is centered around the three metropolitan regions of Bangor, Lewiston/Auburn and Portland.

Figure 4-30: Maine Population Density, 2000

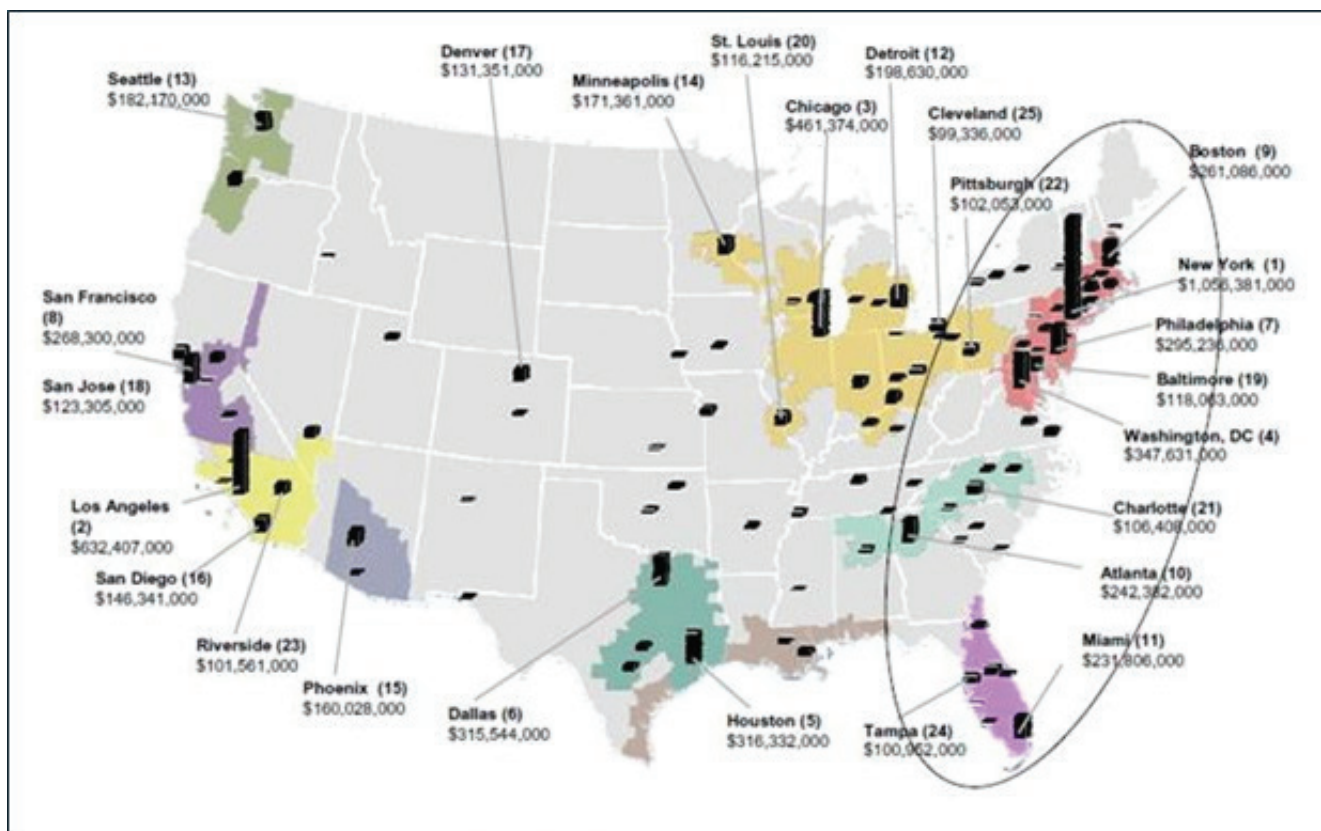


The Brookings Institution has studied the growth and development of U.S. metropolitan areas and has concluded that rural areas such as Maine are dependent upon the services and the consumption of larger population centers. Figure 4-31 illustrates where U.S. domestic population (and thus consumption) centers are located.

The Brookings Institution also notes that these centers are engines of Gross Domestic Production. Transportation corridors which link Maine to these trading centers are essential for the future growth and development of Maine's economy. For southern Maine, these commercial and population linkages are especially important for commerce serving the northeastern and mid-western regions, as well as those developing in the southeast.¹⁴

14 "Charting Maine's Future"; The Brookings Institute; 2006

Figure 4-31: Metro Nation: How U.S. Metropolitan Areas Fuel American Prosperity



Source: Brookings Institution, U.S. Census

4.4.2 Employment

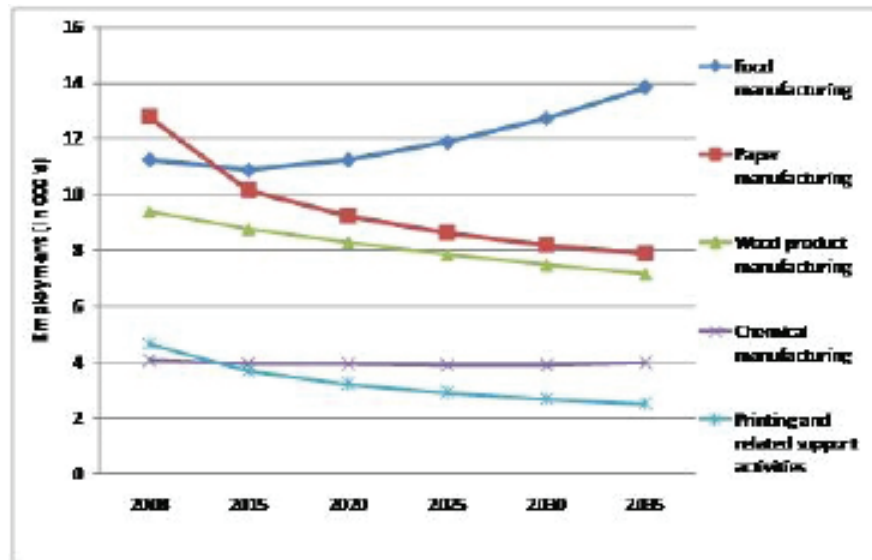
Maine's industrial future is closely tied to the pulp and paper industry - an industry that has historically depended on rail transportation to bring in raw materials and ship out finished products. Economic trends in this sector will set the pace for the short-term, and even emerging industrial sectors that are most likely to depend on rail transportation will face many of the same issues: improving labor productivity and maintaining competitive logistics connections with major domestic and international markets. Despite the expected growth of output in the paper manufacturing industry, overall employment in this industry is forecasted to continue its decline beyond

2010 through 2035. This seemingly contradictory result, growing output and steady or declining employment, is tied to the fact that the pulp and paper industry in Maine is investing in modern, efficient production equipment, thereby increasing the productivity of Maine's paper mills. These investments are essential to manage costs and remain competitive in national and global markets, but it means that Maine's industrial output in this sector will grow much faster than employment.

Efficient, cost effective freight transportation and access to global markets through Maine's ports is just as essential to the pulp and paper industry as investments in advanced production methods. Both production and transportation efficiencies are needed so that the pulp and paper industries - so essential to Maine's economy - can maintain access to the rapidly growing foreign markets, maintain or improve domestic market share, and continue to receive appropriate returns on their investments in equipment used to produce high-quality, competitive products. Other industries that are heavily dependent on rail to ship their commodities are also

anticipated to decline in employment from 2010 forward Figure 4-32. These projected declines in employment reflect increasing productivity per employee in these industry groups.

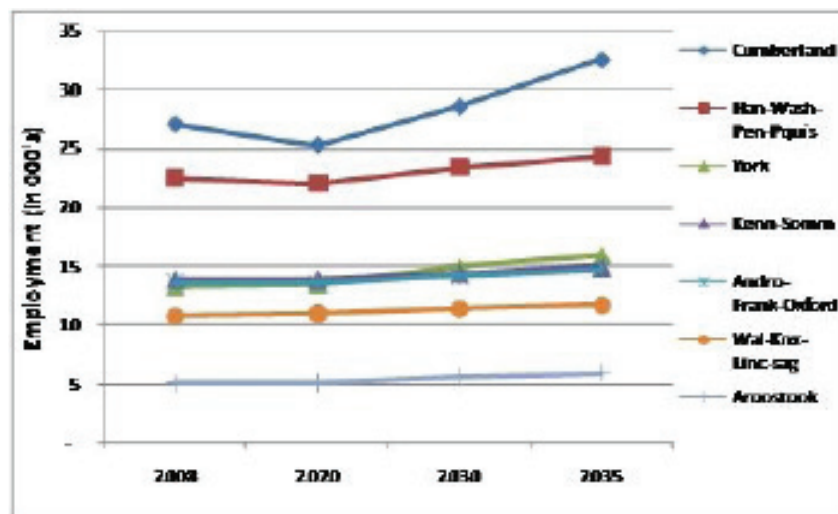
Figure 4-32: Maine Employment Forecast in Rail Dependant Industries, 2008 to 2035



Source: Southern Maine University- Muskie School of Public Service

Maine's economy is expected to make an important transition in the future. A greater percentage of total employment is expected to be concentrated in consumer services, high-end manufacturing, and professional services. Thus, even though the traditionally extractive and commodity-oriented industries are faced with declining employment and increasing productivity-driven output, each county within Maine exhibits an overall positive employment growth trend. Cumberland County is forecasted to have the highest growth since it includes the greater Portland area which will continue to serve as the hub of commercial, retail and residential development in the state Figure 4-33.

Figure 4-33: Maine Employment Forecast by Counties



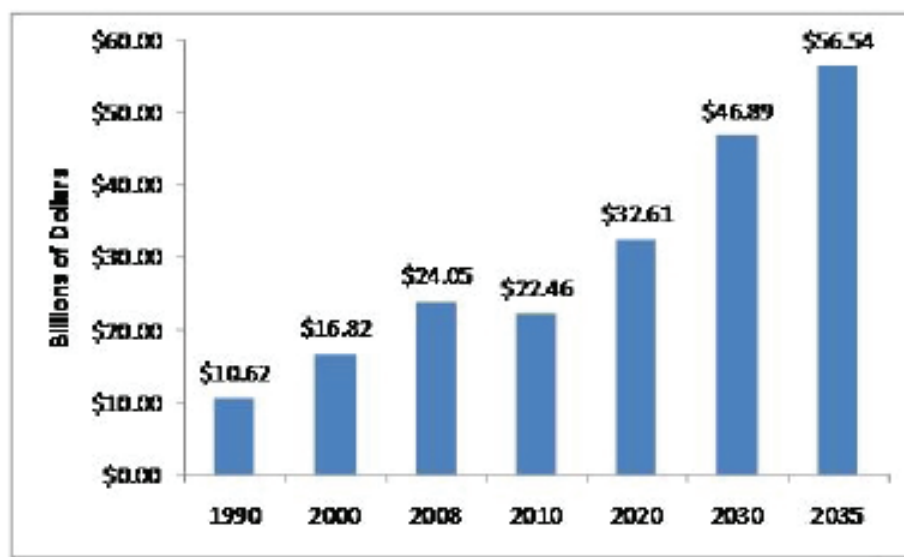
Source: Southern Maine University- Muskie School of Public Service

4.4.3 Retail Sales

Retail sales are an indicator of the potential demand for freight services that support population-driven consumption of both durable and non-durable products. In Maine, most consumer products need to be shipped from other states, or imported from abroad. As Maine's economy recovers and expands into higher-value, higher wage industries, consumer consumption will grow disproportionately to population. This phenomenon is captured in the forecasts of Maine retail sales.

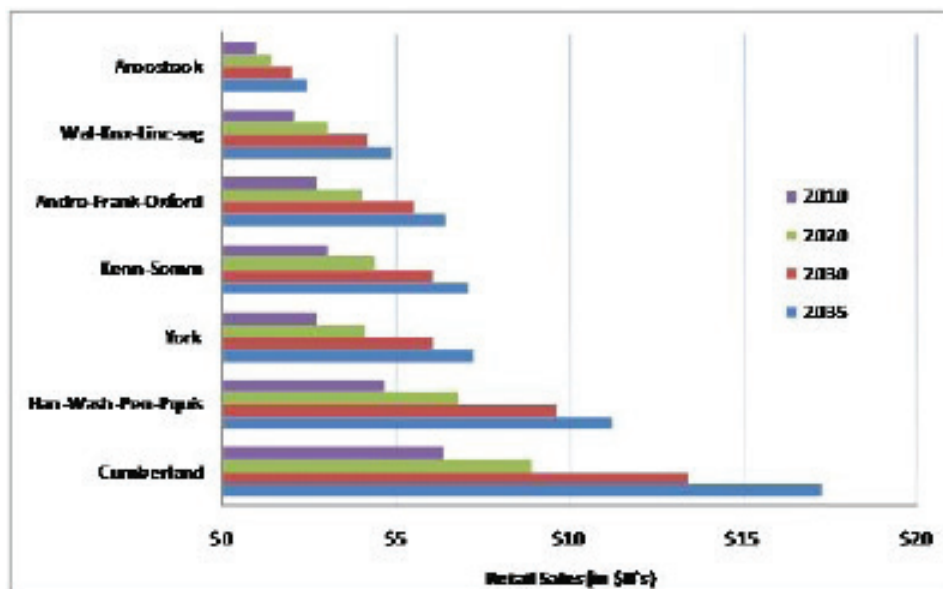
Retail sales in Maine are expected to increase in the future reaching \$56 billion in 2035 Figure 4-35 This represents an average annual growth rate of 3.2 percent between 2008 and 2035 – a growth rate in sharp contrast to the average annual population growth of 0.8 percent over this time frame. These levels of retail demand strongly suggest that both the concentration of population and the increased demand for consumer goods will increase the need to provide warehousing and distribution centers, inbound freight capacity and alternatives to long-distance trucking required for wholesale and retail distribution throughout the state. Cumberland again is the county with the largest retail sales. 2010 sales are expected to double by 2035 in most counties within Maine Figure 4-34.

Figure 4-34: Maine Retail Sales Forecast (Billion 2008\$)



Source: Southern Maine University- Muskie School of Public Service

Figure 4-35: Maine Retail Sales Forecast by County (Billion 2008\$)



Source: Southern Maine University- Muskie School of Public Service

4.4.4 Global Trade Impacts to Maine's Goods Movement Network

Although the U.S. economy has endured the impacts of a serious global recession in recent years economic forecasts in 2009 suggested that recovery would likely begin within the next twelve months.¹⁵ In fact, railroad economic indicators, such as carloadings and shipper surveys suggested the start of recovery late in 2009.¹⁶ While growth may not recover at the pace experienced in the past decade, the trends toward globalization and near-term year-over-year growth in commodity volumes suggest a strong future for global trade in those commodities and raw materials required for developed and developing economies, many of which are produced in Maine. Within the current decade, total US foreign trade is expected to reach pre-recession levels, and continue to trend upwards, with the likelihood that pre-recession export traffic will return to North American ports and gateways within the next two to three years.

International

Exports linked to manufacturing account for an estimated 3.9 percent of Maine's private sector employment. Nearly 15.8 percent of all manufacturing workers in Maine depend on exports for their jobs. A total of 1,390 companies exported goods from Maine in 2007. Of these 1,193 were small to medium-sized companies. Export shipments in 2008 totaled \$3 billion. The State's largest market was Canada which received exports of \$942 million or 31 percent of the state's total exports. Malaysia, Saudi Arabia, South Korea and China accounted for the balance of the top 5 export destinations for the state. The state's leading export category (in terms of its dollar value), computers and electronic products, amounted to 30 percent or \$895 million of the state's total merchandise exports.¹⁷ Other top manufactured exports include paper products, transportation equipment and machinery products.

¹⁵ Economy.com, US Macro Outlook, September 2009; International Monetary Fund, Regional Economic Outlook: Western Hemisphere, October 2009.

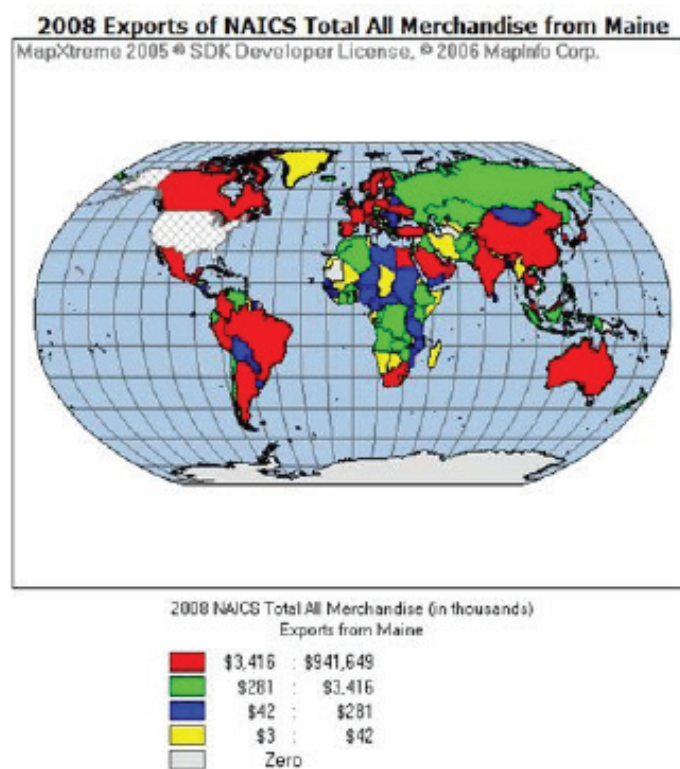
¹⁶ Dahlman and Rose, Track Work Weekly, January 2010.

¹⁷ Source: Bureau of the Census Foreign Trade Division

Maine's exports predominantly (57 percent in 2008) come from the Portland area followed by Bangor and Lewiston- Auburn.¹⁸ Figure 4-36 illustrates Maine's 2008 trade volumes by country. The top trade nations are shown in red. Canada has historically been Maine's top trading partner, however in the past three years Malaysia has begun to rival Canada in terms of total trade value. In 2008 among the top 10 trading partners in Maine, Canada accounted for 31 percent of the international trade dollars, Asia 37 percent, Saudi Arabia and Dubai 7 percent each and European countries 9 percent. The actual statistics are show in Table 4-20.

These trade flows define the corridors of trade and transportation needed to access these global markets. Maine producers need efficient and cost effective transportation to market their products and goods to a global market. Yet global trade which originates or terminates overseas primarily moves through ports not located in Maine. Containerized cargo from Maine tends to use the Ports of New York or Halifax for access to the best maritime container operators.

Figure 4-36: 2008 Exports of NAICS Total Merchandise from Maine



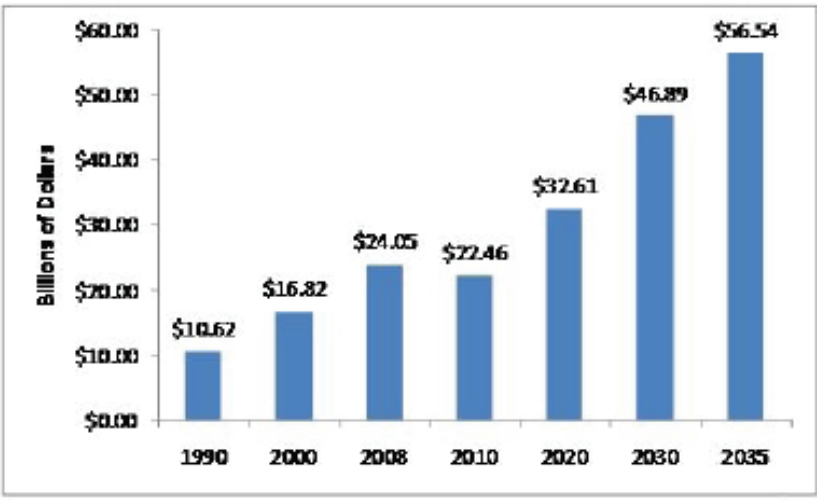
Source: Tradestats.com

Exports to Canada

Current trade with Canada primarily relies on highway transportation and the I-95 corridor, although the rail routes through Maine continue to serve their traditional role of linking the Maritime provinces with continental Canada and the United States.

¹⁸ Source: International Trade Administration and Bureau of the Census, Foreign Trade Division.

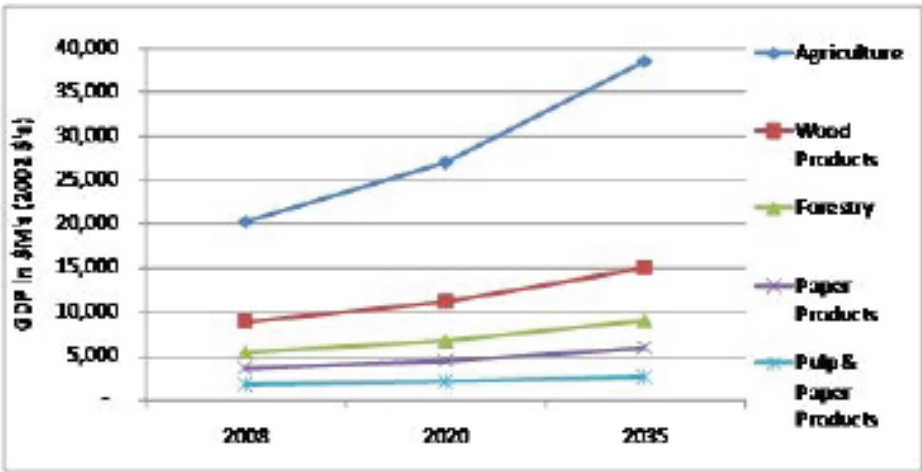
Table 4-20: Maine’s Global Trade Partners Ranked by Financial Value



Source: Tradestats.com

For Canadian provinces that have a history of trade involving commodities produced in Maine, there have been positive trends in output within industries that use these commodities. Forecasts for these industries indicate continued growth in Canadian agricultural and wood and forestry products industries. “Other Agriculture products” currently being transported by truck have the potential for diversion to rail. Figure 4-37 illustrates the forecasts for each Canadian industry that rely on Maine exports.

Figure 4-37: Canadian Trading Provinces GDP Forecast by Industry



Source: Centre for Spatial Economics, January 2009

The primary Maine exports to Canada are in lumber/wood products. These products are used as inputs in the forest products industry, which has a positive growth forecast through 2020 and 2035, indicating the possibility for future export expansion and diversion to rail. Table 4-18 illustrates the associated industries that use these

commodities as inputs for production. The table includes the forecasts for Gross Domestic Product (GDP) growth in these industries in 2020 and 2035.¹⁹ The largest volume of commodities shipped by truck and rail are wood and lumber products and paper articles, which are used in the wood and pulp & paper products industries Table 4-21. The Canadian GDP for these industries are forecasted to grow 1.6 percent and 2.3 percent between 2008-2020 and 2020-2035 indicating the importance of maintaining competitive transportation networks to serve Maine's growing Canadian export trade Table 4-22.

Table 4-21: Origin Maine - Rail and Truck Shipments to Canada

Commodity (Rail STCC)	Tons	Commodity (Truck STCC)	Tons
Lumber/wood products (excl. furniture)	360,270	Wood products	421,560
Pulp, paper or allied products	4,120	Paper articles	137,160
Farm products	14,920	Newsprint/paper	87,950
Other products	13,920	Other Ag. products	26,130
		Other commodities	79,730
TOTAL RAIL	430,200	Total Truck	752,830

Source: STB Waybill sample 2007, FHWA EAF

Table 4-22: Canadian GDP Forecasts (In 2002 \$M's)

GDP Industry	2008	2020	2035	% Annual Growth Rate	% Annual Growth Rate
Wood products	\$8,882	\$11,159	\$14,978	2.1	2.3
Pulp & paper products	\$1,684	\$2,005	\$2,502	1.6	1.7
Paper products	\$3,558	\$4,442	\$5,913	2.1	2.2
Agriculture	\$20,222	\$26,907	\$38,508	2.8	2.9
TOTAL CANADA	\$34,346	\$44,513	\$61,904	2.5	2.6

Source: Centre for Spatial Economics January 2009

Although smaller in comparison to Quebec in overall GDP, the paper products industry in New Brunswick has a significantly higher annual growth rate at 4.1 percent and 4.3 percent for 2008-2020 and 2020-2035, respectively, representing a significant growth opportunity for additional exports. Lumber or wood and pulp/paper products also have forecasted growth for Quebec, which has the largest share of GDP for all Canadian provinces that purchase exports from Maine Table 4-23.

Table 4-23: Canadian GDP Forecasts (in 2002 \$M's)

Province	GDP Industry	2008	2020	2035	% Annual Growth Rate 2008-2020	% Annual Growth Rate 2020-2035
NB	Wood products	\$312	\$392	\$520	2.1%	2.2%
NB	Paper products	\$169	\$200	\$4,153	4.1%	4.3%
PQ	Wood products	\$2,742	\$3,666	\$5,269	2.8%	2.9%
PQ	Paper products	\$2,732	\$3,324	\$4,218	1.8%	1.9%
TOTAL		\$6,255	\$8,081	\$11,190	2.4%	2.6%

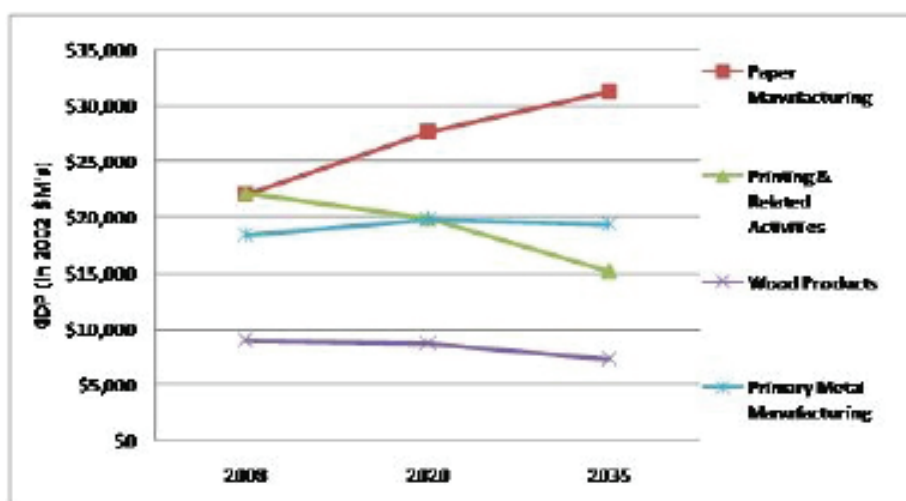
Source: STB Waybill sample 2007 Centre for Spatial Economics January 2009

¹⁹ Centre for Spatial Economics in Canada, September, 2009.

Exports to US States

Of the U.S. states that purchase Maine products primarily shipped by rail, industry sectors involved in paper manufacturing industry have the highest level of forecasted growth through 2035, indicating an opportunity for Maine suppliers. However, printing and wood products, which also use pulp and paper commodity inputs, are forecasted to experience a decline in future growth. These declines are directly tied to reduced demand in the printing and publishing industries as they continue their transition from reliance on traditional print stock to more emphasis on electronically-driven media and distribution technologies. Although newsprint and other paper stock used for mass print media are expected to decline dramatically, demand for higher quality papers is not expected soften to the same degree. This may temper the export opportunity for Maine for this commodity, increase competition for a shrinking market share, and place even greater pressure on transportation costs Figure 4-38.

Figure 4-38: U.S. Trading States GDP Forecast by Industry



Source: Moody's Economy.com

Linking specific commodity demand to industry output forecasts highlights export growth potential to trading states in the paper and primary metal manufacturing industries. Table 4-24 indicates the current commodity shipments transported via rail and by truck and the associated forecasts for industries that use the commodities as inputs into production, respectively.

Table 4-24: Origin Maine - Rail and Truck Shipments to U.S.

Commodity (Rail-STCC)	Tons	Commodity (Truck-STCC)	Tons
Pulp, paper, or allied products	1,970,440	Newsprint/paper	1,855,940
		Paper articles	235,110
Lumber/wood products (exc. furniture)	93,840	Wood products	2,940,010
Waste or scrap materials	70,080	Waste/scrap	867,570
All other products	32,920	Mixed freight	1,117,670
Total Rail	2,236,680	Total Truck	7,013,570

Source: STB Waybill sample 2007, FHWA FAF

As indicated, the pulp, paper, and print commodities are used in the paper manufacturing industry which has a forecasted growth of 2.1 percent in 2020 and 0.9 percent in 2035. Lumber and wood products conversely face a decline and must provide exceptional service in a market that will increasingly become more competitive.

Table 4-25: U.S. GDP Forecasts (in 2000 \$M's)

NAICS	GDP Industry	2008	2020	2035	% Annual Growth Rate 2008-2020	% Annual Growth Rate 2020-2035
322	Paper manufacturing	\$22,049	\$27,623	\$31,273	2.1%	0.9%
323	Printing & related activities	\$22,186	\$19,883	\$15,176	-0.9%	-1.6%
321	Wood products	\$8,975	\$8,691	\$7,363	0.3%	1.0%
331	Primary metal	\$18,401	\$19,819	\$19,383	0.6%	-0.1%
TOTAL U.S.		\$71,612	\$76,017	\$73,191	0.5%	0.2%

Source: Moody's Economy.com

All of the top trading states listed below follow a similar trend in that output for the paper manufacturing industry tends to grow, and output for the printing and wood products industries tends to decline, indicating the potential need for commodity diversification into additional markets with future growth potential Table 4-25 and Table 4-26.

Table 4-26: Exports from Maine Rail and Truck to United States

State	Commodity (Rail)	Tons	Commodity (Truck)	Tons
IL	Pulp, Paper, or Allied Products	253,160	News/print/paper	189,639
			Paper articles	4,920
IL	Lumber or Wood Prods (excl. furniture)	6,460	Wood prods.	39,240
IL	Total IL	258,640	Total IL	233,799
MA	Pulp, Paper, or Allied Products	63,600	News/print/paper	31,569
			Paper articles	53,414
MA	Waste or Scrap Materials	29,840		
MA	Lumber or Wood Prods (excl. furniture)	27,840	Wood prods.	426,272
MA	Total MA	220,280	Total MA	513,255
PA	Pulp, Paper, or Allied Products	99,960	News/print/paper	171,447
			Paper articles	20,811
PA	Lumber or Wood Prods (excl. furniture)	24,860	Wood prods.	425,855
PA	Total PA	124,840	Total PA	618,113

Table 4-27: Exports from Maine Rail and Truck to United States (continued)

State	Commodity (Rail)	Tons	Commodity (Truck)	Tons
KY	Pulp, Paper, or Allied Products	215,080	News, print/paper	92,451
			Paper articles	158
KY	Total KY	215,080	Total KY	92,609
IL	Total IL	258,640	Total IL	233,799
NJ	Pulp, Paper, or Allied Products	184,880	News, print/paper	83,907
			Paper articles	16,084
NJ	Total NJ	184,880	Total NJ	99,992
WI	Pulp, Paper, or Allied Products	152,920	News, print/paper	167,191
			Paper articles	345
WI	Total WI	152,920	Total WI	167,535
GA	Pulp, Paper, or Allied Products	136,000	News, print/paper	38,037
			Paper articles	736
GA	Lumber or Wood Prods (excl. furniture)	7,000	Wood prods.	12,056
GA	Total GA	143,000	Total GA	50,829

Source: STB Waybill sample 2007, FHWA FAF

Table 4-28: United States GDP Forecasts (in 2000 \$M's), 2008, 2020, 2035

NAICS	State	GDP Industry	2008	2020	2035	% Annual Growth Rate 2008-2020	% Annual Growth Rate 2020-2035
322	IL	Paper Manufacturing	\$1,681	\$2,226	\$2,457	2.70%	0.69%
323	IL	Printing & Related Activities	\$2,903	\$2,692	\$1,969	-1.05%	-2.17%
321	IL	Wood Products	\$460	\$465	\$469	0.01%	0.28%
	IL	Total IL	\$5,044	\$5,380	\$4,795	1.67%	1.75%
322	MA	Paper Manufacturing	\$770	\$1,041	\$1,218	1.34%	0.53%
323	MA	Printing & Related Activities	\$1,192	\$1,129	\$876	-0.31%	-0.76%
331	MA	Primary Metal Manufacturing	\$341	\$352	\$328	0.05%	-0.67%
327	MA	Non-metallic Mineral Products	\$497	\$571	\$629	0.37%	0.17%
321	MA	Wood Products	\$165	\$167	\$14	0.02%	0.08%
	MA	Total MA	\$2,964	\$3,259	\$3,191	1.46%	-0.20%
322	PA	Paper Manufacturing	\$2,338	\$2,925	\$4,249	2.91%	0.97%
323	PA	Printing & Related Activities	\$2,471	\$2,034	\$1,459	-2.17%	-1.72%

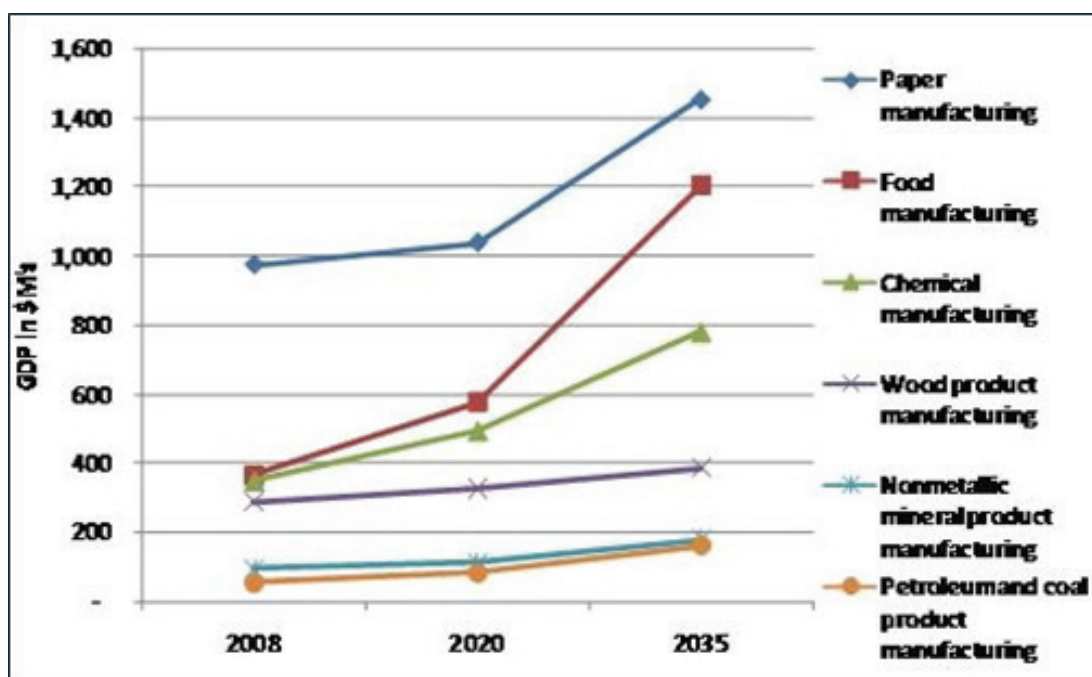
Table 4-28: United States GDP Forecasts (in 2000 \$M's), 2008, 2020, 2035 - Continued

NAICS	State	GDP Industry	2008	2020	2035	% Annual Growth Rate 2008-2020	% Annual Growth Rate 2020-2035
321	PA	Wood Products	\$1,384	\$1,237	\$968	-0.25%	-0.81%
	PA	Total PA	\$7,193	\$7,196	\$6,675	0.01%	1.56%
322	KY	Paper Manufacturing	\$1,217	\$1,443	\$1,560	1.12%	0.35%
323	KY	Printing & Related Activities	\$788	\$656	\$470	-0.60%	-0.56%
	KY	Total KY	\$2,005	\$2,099	\$2,030	0.46%	0.21%
322	NJ	Paper Manufacturing	\$1,269	\$1,834	\$2,254	2.50%	1.26%
323	NJ	Printing & Related Activities	\$1,809	\$1,83	\$1,491	0.1 %	-1.02%
	NJ	Total NJ	\$3,079	\$3,665	\$3,745	2.91%	0.24%
322	WI	Paper Manufacturing	\$3,954	\$4,781	\$4,761	4.10%	-0.06%
323	WI	Printing & Related Activities	\$2,349	\$1,991	\$1,314	-1.77%	-2.63%
	WI	Total WI	\$6,303	\$6,772	\$6,075	2.32%	-2.09%
322	GA	Paper Manufacturing	\$2,905	\$3,456	\$4,364	2.78%	2.39%
323	GA	Printing & Related Activities	\$1,613	\$1,377	\$1,123	-1.31%	-0.76%
321	GA	Wood Products	\$1,265	\$1,148	\$,020	-0.58%	-0.36%
	GA	Total GA	\$5,812	\$5,990	\$6,407	0.89%	1.25%

The food manufacturing industries show a sharp increase in growth projected between 2020 and 2035. Chemical, wood, and non-metallic mineral industries and food manufacturing industries also indicate slight growth Figure 4-39. Forecasts for the paper industry between 2020 and 2035 indicate an annual growth rate of 2.6 percent. Recent forecasts suggest that Maine will tend to increase the relative percentage of volumes of imported petroleum and coal products in the future.²⁰

²⁰ Southern Maine University- Muskie School of Public Service

Figure 4-39: Maine GDP Forecast by Industry (in 2000 \$M's)



Source: Southern Maine University- Muskie School of Public Service

Table 4-29: Maine GDP Forecasts (in 2000 \$M's)

Maine Industries	In \$M's			% Avg. Annual Growth Rate	
	2008	2020	2035	2008-20w	2020-35
Paper manufacturing	\$973	\$1,037	\$1,452	0.53%	2.27%
Food manufacturing	\$366	\$576	\$1,203	3.85%	5.03%
Chemical manufacturing	\$349	\$494	\$779	2.94%	3.08%
Wood product manufacturing	\$287	\$325	\$386	1.04%	1.15%
Nonmetallic mineral product manufacturing	\$95	\$112	\$178	1.38%	3.14%
Petroleum and coal product manufacturing	\$52	\$82	\$160	3.87%	4.56%
Other Manufacturing	\$3,682	\$5,000	\$7,475	2.58%	2.72%
Total	\$5,804	\$7,626	\$11,633	2.30%	2.86%

Source: Southern Maine University - Muskie School of Public Service

Imports from Canada

Maine imports approximately 4.7 million tons of commodities via truck and rail from Canada (see Table 4-25). Approximately 3.7 million tons is transported by truck (78.4 percent) with the other 1.1 million tons coming into the state via rail. Of those imports entering by truck, 1.5 million tons (41.8 percent) are gasoline, with coal, paper/wood products, and chemicals comprising 1.1 million tons (29.5 percent) and the remaining listed commodities comprising just 0.7 million tons (18.4 percent). All other commodities shipped via truck total just 0.4 million tons (10.4 percent).

Rail transported commodities are less diverse with 0.9 million tons (83.6 percent) of all rail shipments carrying pulp & paper or hazardous materials. The remaining rail-borne shipments total less than 0.2 million tons (16.4 percent) and include commodities such as lumber/wood products, chemicals, food and other commodities.

Table 4-30: Origin Canada - Rail and Truck Shipments to Maine

Commodity (Rail-STCC)	Tons	Commodity (Truck-STCC)	Tons
Pulp, paper or allied products	449,270	Gasoline	1,548,690
Hazardous materials	409,160	Coal n.e.c.	425,000
Lumber or wood products excluding furniture	57,160	Nonmetallic minerals	399,950
Chemicals or allied products	50,720	Wood prods.	267,760
Freight all kinds	28,000	Newsprint/paper	55,250
Food or kindred products	22,200	Paper articles	42,770
Other commodities	9,120	Basic chemicals	26,730
		Chemical prods.	64,680
		Other foodstuffs	77,680
		Nonmetal min. prods.	74,900
		Other commodities	384,570
TOTAL	1,019,600	TOTAL	3,707,680

Source: STB Waybill sample 2007 & FHWA FAF

These Canadian imports are highly concentrated on commodities that make up the basic raw material inputs to key Maine industries, or that supply the energy resources needed to power these industries. Therefore, the long-term forecasts for these industries, as shown in Figure 4-39, suggests that maintaining and preserving existing rail linkages to Canada is an important element for the continued growth and competitiveness of Maine's traditional industries. To the extent that exiting truck traffic can be diverted to more energy-efficient rail shipments, both GHG emissions and highway congestion can be reduced.

Table 4-31: Origin US States - Rail and Truck Shipments to Maine

Commodity (Rail-STCC)	Tons	Commodity (Truck-STCC)	Tons
Clay,陶器, glass or stone products	395,960	Fuel Oils	749,130
Chemicals or Allied Products	176,680	Base metals	703,270
Food or Kindred Products	169,678	Logs	618,310
Farm products	126,696	Nonmetallic minerals	506,810
Lumber or wood products, excluding furniture	104,800	Other foodstuffs	483,060
Hazardous materials	60,640	Misc. org. products	386,670
Pulp, paper or allied products	75,600	Chemical prods.	386,070
Other commodities	55,768	Wood products	344,710
		Natural sands	365,450
		Coal n.e.c.	357,400
		Other commodities	4,827,970
TOTAL	1,185,192	TOTAL	9,758,760

Source: STB Waybill sample 2007 & FHWA FAF

Imports from US States

Shipments of goods to Maine from its major trading partners are predominantly by truck, with 9.7 million tons (89.2 percent) of the total of 10.9 million tons entering the state by truck. Of this, 4.8 million tons (49.5 percent) is highly diversified and unlikely to be diverted to rail.

Rail shipments to Maine from other states are dominated by clay, stone, concrete and glass products (0.4 million tons – about 33.4 percent of all rail shipments to Maine.) Chemicals and allied products constitute the second largest rail volumes (177,000 pounds in 2007 – about 15 percent of all rail shipments). Food and farm products as a group account for 296,000 pounds – or about 25 percent of all rail shipments to Maine from other states.

Of the potentially divertible bulk commodities shipped to Maine via truck, the volumes are substantial, amounting to 4.9 million (50.5 percent) of the 9.7 million tons trucked to Maine in 2007, with approximately 3.3 million tons (34.2 percent) of these commodities clustered in the groups that support the paper and pulp, chemical manufacturing and wood products industries.

4.5 Environmental Sustainability of Rail

In 2008 Maine was reliant on the motor carrier mode for 85 percent of its commercial goods movement.²¹ Concurrently, Maine's passenger rail system has been evolving during the last decade, and continues to play a growing role in personal mobility in the state and region. Future expansion and modernization of Maine's passenger and freight rail system may enhance air quality and energy consumption to the benefit of the state and region.

Although many have been conscientious about environmental issues in the past, the current awareness of global climate change, coupled with uncertainty about fuel costs, has initiated substantially more interest in transportation issues, and a concurrent increase in environmental concerns. Recent studies have shown that transportation accounts for 28 percent of United States greenhouse gas emissions, and in Maine, 40 percent of the state's greenhouse gas emissions are transportation-related.²²

On the national level the railroad industry is working to reduce its carbon footprint, and contribute to other environmental enhancements. Greenhouse gas emissions are directly related to fuel consumption.²³ According to the Association of American Railroads (AAR), freight rail has increased its fuel efficiency by 94 percent since 1980. The most recent fuel consumption data available show that freight rail fuel efficiency per ton-miles of goods movement on average is two to four times greater than truck fuel efficiency.

Passenger rail service also decreases overall fuel consumption. On average, a single occupant vehicle emits about 1,047 lb of carbon dioxide (CO₂) per month, while those emissions decrease to 369 lb CO₂/month if that person were to switch to passenger rail service for their daily commuting needs.²⁴

4.5.1 Air Quality

Air pollution is a major public concern because of its potential adverse effects on human health and welfare. Of special concern are the respiratory effects of the pollutants on humans, as well as their general toxic effects in the environment. The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for several "criteria" pollutants in order to protect the health and welfare of the

21 Maine Department of Transportation, Moving People and Goods - The Governor's Rail and Port Investment Plan, July 2009.

22 Jacobson et al., University of Maine, Maine's Climate Future, April 2009.

23 Federal Railroad Administration, Comparative Evaluation of Rail and Truck Fuel Efficiency on Competitive Corridors, November 2009.

24 <http://www.travelmatters.org/>

general public. Of these pollutants, transportation sources primarily emit carbon monoxide (CO); coarse and fine respirable particulate matter (PM10 and PM2.5); and ozone (or smog-producing) precursor substances that include hydrocarbons (also known as volatile organic compounds or VOCs) and oxides of nitrogen (NOx).

Public concern has increased in recent years about the potential effects of certain non-criteria pollutants on global climate change. Among these pollutants are the “greenhouse gases” (GHGs), which absorb heat radiation from the earth, thereby potentially increasing atmospheric temperatures and changing global weather patterns. While not the most potent of a number of the GHGs, CO₂ is emitted from fossil fuel combustion at such relatively large amounts each year, especially from transportation-related projects, that discussion of carbon emissions and GHGs is often considered one and the same.

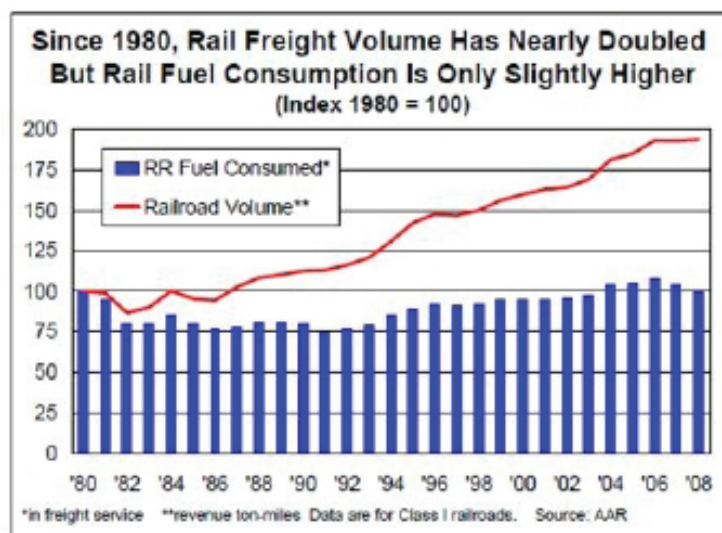
EPA has been tracking US GHG emissions for many years and has started to implement rules and regulations to record progress in achieving reductions. EPA keeps track of air pollutants that are known to cause health problems. According to EPA data, in 2007 total U.S. greenhouse gas emissions were 7,150 teragrams (trillion grams) of carbon dioxide equivalents. Non-transportation sources (power plants, industry, etc) accounted for 72 percent of this total, with transportation accounting for the remaining 28 percent Figure 4-40. The 51.6 teragrams accounted for by railroads was just 0.7 percent of total U.S. greenhouse gas emissions and just 2.6 percent of transportation-related emissions.

Figure 4-40: Greenhouse Gas Emissions By Economic Sector

U.S. Greenhouse Gas Emissions By Economic Sector: 2007			U.S. Greenhouse Gas Emissions from Transportation: 2007		
Economic Sector	Tg CO ₂ Eq.	% of Total	Economic Sector	Tg CO ₂ Eq.	% of Total
Electr. generation	2,445.1	34.2%	Trucking	410.8	20.8%
Residential	355.3	5.0%	Freight Railroads	51.6	2.6%
Industry	1,380.3	19.4%	Waterborne Freight	39.1	2.0%
Agriculture	502.8	7.0%	Pipelines	34.6	1.8%
Transportation	1,995.2	27.9%	Aircraft	173.4	8.8%
Commercial	407.6	5.7%	Passenger Boats	17.2	0.9%
U.S. Territories	57.7	0.8%	Passenger Railroads	6.2	0.3%
Total	7,150.0	100.0%	Cars, Light Trucks, Motorcycles	1,228.4	62.2%
Data are in teragrams of CO ₂ equivalents.			Buses	12.4	0.6%
Source: EPA, <i>Inventory of U.S.</i>			Total	1,973.7	100.0%
<i>Greenhouse Gas Emissions and Sinks: 1990-2007, Tables ES-7, A-100, and A-101.</i>					
Totals for “transportation” in the two tables do not match exactly because of estimation issues.					

The AAR reported that in 2008 Class I freight railroads used 3.7 billion fewer gallons of fuel and emitted 41 million fewer tons of carbon dioxide — than they would have if their fuel efficiency had remained constant since 1980. From 1980 through 2008, United States freight railroads consumed nearly 52 billion fewer gallons of fuel and emitted 579 million fewer tons of carbon dioxide than they would have if their fuel efficiency had not improved Figure 4-41.

Figure 4-41: Historical Rail Freight Volume and Fuel Consumption



The EPA designates regions in which ambient pollutant concentrations are in compliance with the NAAQS as Attainment Areas, and areas not in compliance with the NAAQS as Nonattainment Areas. A Maintenance Area is an area that has been re-designated from nonattainment status to attainment status. Maintenance status is in effect for 10 years from its re-designation date. There currently are two areas in Maine that are designated by EPA as Maintenance Areas for 8-hour ozone concentrations. These areas include parts of Hancock, Knox, Lincoln, and Waldo Counties, and parts of Androscoggin, Cumberland, Sagadahoc, and York Counties.²⁵ There is one sulfur dioxide Maintenance Area in Maine, in the Town of Millinocket, and one PM10 Maintenance Area, which includes the City of Presque Isle.

Based on EPA's and Maine DEP's continuous ground-level ozone monitoring, Mainers have been experiencing a gradual decrease in unhealthy air quality days since the 1980s. Records indicate that there were multiple years in the 1980s that had 30 or more days that exceeded the most recent (2008) 8-hour ozone standard of 0.075 parts-per-million (ppm). However, in the current decade, just one year had more than 25 days that exceeded the ozone standard. In the last 5 years, the maximum number of days exceeding the ozone standard in a single year was 15, in 2005.

Notwithstanding health and climate change issues, poor air quality also affects visibility in some areas. Visibility of pristine views can be diminished by haze in the air. The haze is often an effect of fine particles that absorb or scatter light. Some haze particles are emitted directly into the air, while others are formed in the air through chemical reactions of gaseous pollutants. Pollutants that can cause haze come from natural and man-made sources, including wind-blown dust, industrial point sources, and motor vehicles.

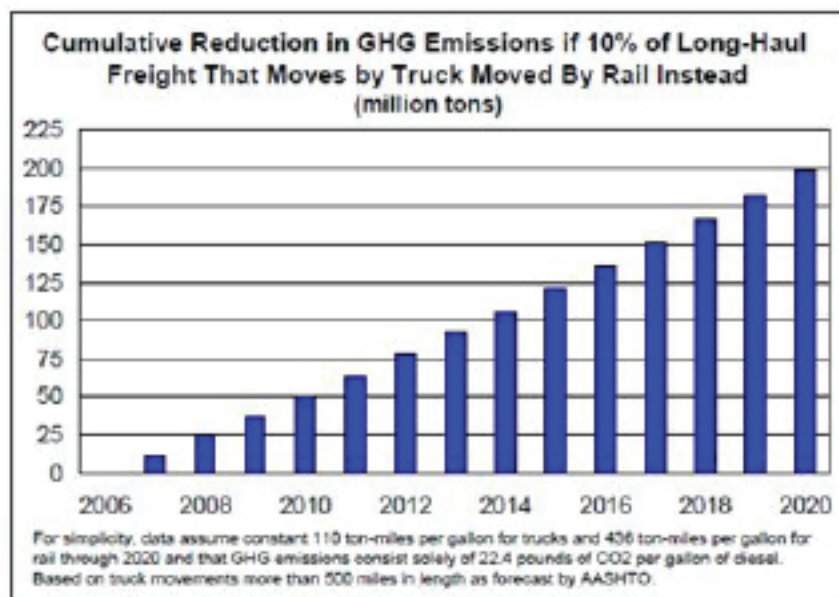
EPA adopted the Regional Haze Rule in 1999. The rule requires that natural visibility conditions be achieved in states that contain federally protected parks and wilderness areas known as Class I areas by the year 2064. Class I areas in Maine include Acadia National Park and the Moosehorn National Wildlife Refuge. EPA-mandated emission controls on both on-road and off-road diesel mobile sources will continue to improve the visibility issues in Maine.

25 US EPA Greenbook, <http://www.epa.gov/oar/oaqps/greenbk/index.html>, accessed 11/20/09.

Maine DEP developed the Climate Action Plan for Maine²⁶ in 2004 with the goals of reducing GHG emissions to 1990 levels by 2010, and to 10 percent below those levels by 2020. These goals were developed based on the vision that climate change was already affecting the state, and that steps needed to be taken to avoid the potential impacts of climate change that could result in additional future hardships. Potential climate change problems in Maine could include invasive plant and insect species, rising sea levels affecting coastal locations, warmer temperatures affecting the winter activity industry, and longer summers, which could increase the frequency of summer traffic congestion. To address these issues, DEP recommended 54 actions to meet the state's goals. Along with Maine, other states with similar plans have also recommended the following adaptation strategies: 1) monitor the changing environment; 2) incorporate climate change into current and future planning; 3) reduce stress on threatened and endangered species; and 4) maintain/restore habitat connectivity and/or natural barriers to sea level rise.

In its latest report on Progress Towards Greenhouse Gas Reduction Goals,²⁷ DEP states that Maine continues to make significant progress toward its goal of reducing greenhouse gas (GHG) emissions so that by 2020 there will be sufficient reductions to reach the CO₂ target of 10 percent below 1990 emission levels. Using rail to move goods instead of trucks has been shown to reduce GHGs, especially over long haul distances.²⁸ Nationally, if approximately 10 percent of freight being carried over long distances was switched to rail rather than trucks, more than 12 million tons of GHG emissions could be reduced annually in the United States Figure 4-42. This is equivalent to removing 2 million cars from the road or planting 280 million trees.

Figure 4-42: Cumulative Reduction in Greenhouse Gas Emissions



It has also been shown that passenger rail service leads to reductions in GHG emissions. The American Association of State Highway and Transportation Officials (AASHTO) has acknowledged that intercity passenger rail is 17 percent more GHG efficient than air travel and 21 percent more GHG efficient than automobile travel. The American Public Transportation Association (APTA) reports that public transportation reduced CO₂ emissions by nearly 7 million metric tons in 2005.²⁹

²⁶ Maine Department of Environmental Protection, Climate Action Plan for Maine 2004, December 2004.

²⁷ Maine Department of Environmental Protection, Second Biennial Report on Progress toward Greenhouse Gas Reduction Goals, January 2008.

²⁸ Association of American Railroads, Railroads: Green From the Start, July 2009.

²⁹ <http://www.apta.com/Pages/default.aspx>

In Maine, the Downeaster passenger service from Portland to Boston has seen increasing use since it began operation in 2001. The latest statistics show that over half a million riders have used the service in 2012.³⁰ In fact, since 2001 the Downeaster has transported more than 2.2 million passengers and taken more than 200 million passenger miles off the roads. By eliminating these highway vehicle miles traveled (VMT), substantial reductions in GHG emissions have been achieved.

In May 2004, as part of the Clean Air Nonroad Diesel Rule, EPA finalized new requirements for nonroad diesel fuel that will decrease the allowable levels of sulfur in fuel used in locomotives by 99 percent by the year 2012. These fuel improvements are expected to allow manufacturers to incorporate better emission control strategies in their designs, and ultimately, lead to considerable environmental and public health benefits by reducing PM and NOx emissions from diesel locomotive engines. In March 2008, EPA set regulations that are expected to significantly reduce emissions from diesel locomotives of all types -- line-haul, switch, and passenger rail. The rule is expected to decrease PM emissions from these engines by as much as 90 percent and NOx emissions by as much as 80 percent, when fully implemented. The rule establishes emission standards for NOx, HC, CO, and PM for newly manufactured and remanufactured locomotives. These standards, which are codified at 40 CFR Part 1033, include several sets of emission standards with applicability dependent on the date a locomotive is first manufactured, as noted within the table below Table 4-32.

Table 4-32: Emission Standards for Line-Haul Locomotives (g/bhp-hr)

Tier	Model Year	Eff. Date	hC	CO	NOx	pM
0	1973-1992 ^a	2010 ^b	1.00	5.0	8.0	0.23
1	1993-2004	2010 ^b	0.55	2.2	7.4	0.23
2	2005-2011	2010 ^b	0.30	1.5	5.5	0.20 ^c
3	2012-2014	2012 ^c	0.30	1.5	5.5	0.10
4	2015 or later	2015 ^d	0.14	1.5	1.3	0.03

a. Locomotive models that were originally manufactured in model years 1993 through 2001, but that were not originally equipped with a separate coolant system for intake air are subject to the Tier 0 rather than the Tier 1 standards.
b. Line-haul locomotives subject to the Tier 0 through Tier 2 emission standards must also meet switch standards of the same tier.
c. Tier 3 line-haul locomotives must also meet Tier 2 switch standards.
d. Manufacturers may elect to meet a combined NOx+HC standard of 1.4 g/bhp-hr instead of the otherwise applicable Tier 4 NOx and HC standards.
e. The PM standard for newly remanufactured Tier 2 line-haul locomotives is 0.20 g/bhp-hr until January 1, 2013.

Source: EPA (2008)

Along with EPA's regulated emission controls, railroads continue to apply operating practices that reduce their effect on the environment. Some of these practices include the use of better schedule timing and anti-idling policies. Using more scheduled operations reduces idling time as trains wait on sidings, and leads to less stop-and-go operations. It also decreases the number of trains that work at full speed up to the point that they sit and wait. By setting a schedule, trains may operate at speeds that conserve fuel and reduce pollutant emissions. Reducing speeds not only may save fuel and reduce emissions while the train is moving, but can reduce idling time when a train arrives at its destination too early. Many railroads have already instituted anti-idling policies. In fact, the three major railroads in Maine (MMA, SLA, and Pan Am) are utilizing auxiliary power units (APUs)

30 <http://www.amtrakdowneaster.com/>

in their fleets. And passenger locomotive engines used by Amtrak and MERR are equipped to use electric shore power. In addition, the SLA Railroad is a member of EPA's Smartway Transport Partnership program, which is a voluntary program that EPA developed to benefit the interests of the freight industry, as well as EPA's own interests. The common interests include reduced fuel consumption and reduced air pollution.

Maine continues to be a leader among states that understand the importance of environmental awareness in the 21st century. Maine's Statewide Long-Range Transportation Plan³¹ acknowledges that Maine's transit providers lead the state's efforts to reduce mobile source emissions and that strategic highway and transit projects could reduce emissions of CO₂ by 26 to 32 thousand metric tons by 2020. Nationally, it has been estimated by AASHTO that cumulative reductions in GHG emissions between 2010 and 2020 could reach 150 million tons, if 10 percent of long-haul freight were moved by rail instead of truck.

4.5.2 Energy

In June 2008 the Governor of Maine established the Pre-Emergency Energy Task Force to investigate escalating heating oil, gasoline, and diesel prices in Maine. By June 2009, the Governor had signed into law, "An Act Regarding Maine's Energy Future." The law is designed to eliminate Maine's dependence on foreign fuels over time and to provide energy self-sufficiency and lower energy prices for Maine's people and businesses. One of the major goals established in the law is to reduce Maine's liquid fossil fuel consumption by at least 30 percent by the year 2030.

In January 2009, the Office of Energy Independence and Security published the State of Maine Comprehensive Energy Plan 2008-2009. In the Plan, four major goals for improving transportation and fuel efficiencies were defined. These goals include: 1) Supporting and enhancing state and private sector efforts for education and awareness of alternative transportation options and promotion of a low-carbon fuel standard and fuel efficient vehicles; 2) Supporting state transportation investments and encouraging private investment for enhanced passenger and freight transportation systems; 3) Encouraging greater coordination of land use and transportation policies to reduce VMT and decrease GHG emissions; and 4) Supporting public-private partnerships to develop "explorer" transit systems for tourist destinations. Towards these goals, a number of rail-related objectives were recommended for implementation. Some of these recommendations include:

- Making rail and transit projects higher priorities in State transportation planning;
- Working with Maine Congressional leaders and the President's administration to achieve federal funding for rail-related projects;
- Continuing to work towards the expansion of the Downeaster service to Freeport, Brunswick and beyond;
- Making sure that the Industrial Rail Access Program continues to provide relief for businesses needing connections to railroads;
- Continuing the Local Freight Rail Assistance Program so that loans are provided to businesses that are adjacent to rail corridors to construct access to those corridors; and
- Working towards re-establishing the Lewiston Lower Road rail line to area shippers.

Expansion of rail service in Maine, in terms of either passenger or freight movement, could assist in reaching the goals established in the "Energy Future" law and in the State's "Comprehensive Energy Plan." As noted previously, rail transportation has been shown to be more energy efficient than the highway mode for both movement of goods and passengers.

³¹ Maine Department of Transportation, Statewide Long-Range Transportation Plan 2008-2030, December 2008.

Based on national averages, freight railroads moved a ton of freight approximately 457 miles on one gallon of fuel in 2008. This is more than three times farther than a truck carries one ton of freight on one gallon of fuel. Comparably, AAR, using USDOT data, estimates that trains consume approximately 7 gallons of fuel hauling one ton of freight coast-to-coast, while trucks would consume about 27 gallons. The latest FRA published data on rail and truck fuel efficiency confirm that there are significant amounts of fuel savings when using rail instead of trucks, especially over long distances.

Using rail to move freight also relieves highway congestion, which in turn, reduces passenger vehicle fuel consumption. It has been estimated that one train can remove the freight equivalent of 280 or more trucks off of our roadways. In 2008, a study of traffic congestion in urban areas called the “Congestion Relief Index” (7th annual) developed estimates of commuter fuel savings if 25 percent of freight were taken off of the roads and switched to rail by the year 2026. Although no data were developed for the Portland, ME to Boston, MA commute, the study did include a Boston, MA-NH commute. The results showed an annual travel delay hour savings per commuter of 39 hours, and annual gallons of fuel saved per commuter of 66 gallons.

Energy savings can also be realized if more people switch to rail travel rather than air travel or personal vehicle highway travel. According to the US Department of Energy’s latest data on energy use per passenger-mile traveled,³² domestic air travel consumed approximately 23 percent more energy than intercity Amtrak service and personal motor vehicle travel consumed almost 46 percent more energy than Amtrak service.

Both freight and passenger railroads continue efforts to reduce fuel use for economic reasons as well as environmental reasons. In addition to implementing operating practices described previously, to meet their objectives, new technologies are being adapted as well. Locomotive engine combustion research continues to develop innovative technologies to reduce fuel use and emissions that will eventually become commonplace in the railroad industry.

Some of these technological improvements, as described by AAR,³³ include:

- New locomotives - Railroads have spent billions of dollars in recent years on thousands of new, more fuel efficient locomotives and on overhauling older units to make them more fuel efficient. Many new locomotives are “genset” (generator set) switching locomotives that assemble and disassemble trains in rail yards. Gensets have two or three independent engines that switch on and off depending on how much power is needed for the task at hand. Some switching locomotives are hybrids with a small diesel-fueled engine and a large bank of rechargeable batteries. Research is underway on hybrid long-haul locomotives.
- Locomotive monitoring systems - Railroads use sophisticated on-board monitoring systems to gather and evaluate information on location, topography, track curvature, train weight, and more to provide engineers with real-time “coaching” on the best speed for that train from a fuel-savings standpoint.
- Components and design - Railroads use innovative freight car and locomotive designs to save fuel. For example, advanced top-of-rail lubrication techniques save fuel by reducing friction and wear.

It should be noted that these investments by national railroads are driven by volume and traffic density. Maine’s railroads are constrained by low volumes of traffic, and therefore capital investments are likewise constrained.

32 US Department of Energy, Transportation Energy Data Book – Edition 28, 2009.

33 Association of American Railroads, Freight Railroads Offer a Smart, Effective Way to Reduce Greenhouse Gas Emissions, June 2009.

CHAPTER 5 | *Safety and Security*

The purpose of this chapter is to discuss safety and security in the railroad industry. Safety and security are critical issues facing both the railroad industry and the entire transportation sector. MaineDOT is committed to the safety and security of the state's transportation network, including the railroad system. Primary responsibility for railroad safety lies with the operating railroad companies, as guided by federal and state laws and regulations, and their own operating practices. However, public safety and national security require a proactive role for both states and the federal government.

MaineDOT's interest in railroad safety and security is focused on public safety. Railroad operations interface with public safety in three key areas: highway/railroad grade crossings; passenger rail operations; and transportation of hazardous materials.

5.1 *Federal and State Roles*

The government agency charged with primary responsibility for regulating, monitoring and improving safety on the nation's rail system is the Federal Railroad Administration (FRA). Since the terrorist attacks of September 11, 2001 the Department of Homeland Security (DHS) and the Transportation Security Administration (TSA) have also been assigned oversight of some aspects of both passenger and freight rail security.

The Federal Railroad Safety Act of 1970 assigned to the FRA specific authority over all rail safety related matters and authorized the FRA to establish civil penalties for violations of the regulations issued under the Act. Subsequent legislation has increased the FRA's regulatory authority, as well as clarifying some issues such as limits on the hours of service of certain classes of railroad employees. The 1970 Act defined the railroad safety program:

- Broad regulatory authority to address all areas of railroad safety;
- Strong emphasis on national uniformity of safety standards;
- Effective sanctions, including the ability to address emergency situations; and,
- State participation in enforcement of national standards.

The FRA regulates highway/railroad at-grade crossing signal system safety as prescribed in 49 CFR, Part 234. This regulation provides for minimum maintenance, inspection, and testing standards for warning systems at crossings, and defines standards for reporting and taking action on system failures.

The FRA also requires railroads to conduct periodic inspections of track as defined in 49 CFR Part 213. The railroads must use qualified inspectors and maintain records for FRA review. FRA inspectors may perform their own inspections from time to time. This same procedure applies to railroad structures (bridges). FRA also utilizes state resources for inspections through its State Participation Program. MaineDOT is qualified under this program and has a certified track inspector within its Transportation Maintenance unit.

FRA has developed and implemented several new regulatory requirements and initiatives as required by the Rail Safety Improvement Act of 2008 (RSIA). These regulations focus on human factors in rail safety and provide for more stringent requirements for the testing and inspecting of the performance of railroad operating crews and require improved training and qualification of the supervisors conducting the testing and inspection programs.

The RSIA also established several important safety initiatives and programs. Principal elements of the law are:

- Positive Train Control;
- Performance monitoring requirements;
- Railroad safety risk reduction program; and,
- Grade crossing safety.

Railroads are required to comply with the FRA regulatory regime. The States' role in railroad safety and security is closely aligned to the federal scheme, and is often related to more localized conditions and circumstances.

Some safety and security challenges are common to both passenger and freight modes, while others are unique to specific rail kinds of operations. Key challenges center on securing passenger operations, improving rail system infrastructure, and fortifying security of the railway network. Open access to rail lines and rail stations make railroads more difficult to secure than the facilities of other modes of transport, such as ports and airports.

Securing the passenger and freight rail network is a responsibility shared among federal, state, local governments and the owners and operators of the railroad system. The federal Transportation Security Administration (TSA) is the lead agency to coordinate security issues among the many stakeholders.

TSA utilizes its Visible Intermodal Prevention and Response teams to increase security in all modes of transportation. VIPR teams work in concert with railroads, state and local police, and state departments of transportation. These efforts to increase visibility of active surveillance in and around rail facilities seek to deter access and potential illegal activities.

5.1.1 Freight Rail Security

Following the terrorist attacks of September 11, 2001, the Association of American Railroads (AAR) established a Railroad Security Task Force. That task force produced the "Terrorism Risk Analysis and Security Management Plan" that was designed and adopted to enhance the security of freight railroad operations. The plan identified more than 50 security-enhancing countermeasures put in place by the freight railroad industry. Communication among security officials, law enforcement and the railroads is critical to ensuring secure operations in Maine's rail transportation system. The AAR and the American Shortline and Regional Railroad Association (ASLRRA) and their member railroads work cooperatively with TSA in implementing a range of safety, security and communications procedures. The details of these programs are subject to security controls and are not generally available to the public.

On November 26, the Transportation Security Administration (TSA) of the Department of Homeland Security (DHS) published a new final rule applying to the transportation of certain kinds of highly hazardous materials.¹ On that same day, a U.S. DOT rule making was finalized that applies to railroad carriers, focusing primarily on routing and storage in transit.²

The freight rail provisions of the TSA rule address the transport of security-sensitive materials by rail from start to finish, including shipment handoffs, secure areas for transfers, and the reporting of shipment locations to TSA. The designation of rail security coordinators for passenger and freight rail carriers also is mandated by the Rail Security final rule, and all significant security concerns must be reported to the Transportation Security Administration (TSA). The rule also codifies TSA's broad inspection authority.

¹ <http://edocket.access.gpo.gov/2008/pdf/E8-27287.pdf>

² <http://edocket.access.gpo.gov/2008/pdf/E8-27826.pdf>

5.1.2 Highway-Rail Grade Crossing Safety

MaineDOT has a long and successful history of working with the railroads and the US DOT to upgrade safety warning devices at highway/railroad at-grade crossings throughout the state. Recognizing the hazards associated with public grade crossings, Congress and the Federal Highway Administration (FHWA) have made federal funds available to states to assist in eliminating and/or mitigating the hazards associated with these crossings, most notably through the Section 130 program administered by FHWA and state highway departments.

The MaineDOT manages the Grade Crossing Safety Improvement Program which funds safety projects at railroad grade crossings with public roads. This program provides funds for signal installation/upgrades to enhance safety at grade crossings. The state share of funding for this program is provided through the biennial appropriations process.

Although the number of crossing accidents is fewer than roadway vehicular accidents, the consequences are often more severe due to the weight and size of rail equipment. Crossing accidents put the safety of many people at risk, including vehicle occupants, pedestrians, train passengers and train crews.

As of 2008, the FRA reported 1,679 highway-rail grade crossings in Maine, of which 836 were active grade crossings located at public roads, as shown in Table 5-1. Of the active crossings, 273 utilize only cross buck signs as warning devices. All other locations use active warning devices (e.g., lights, bells or gates).

Table 5-1: Warning Devices at Public Highway-Rail Grade Crossings in Maine, 2008

Warning Device	total	percent of total
Flashing Lights	393	47%
Crossbucks	273	32.7%
Gates	84	10%
Special Warning	64	7.7%
Stop Signs	11	1.3%
Unknown	7	0.8%
HWTs, WW, bells	4	0.5%
Other	0	0%
TOTAL	836	
Source: U.S. Department of Transportation, Federal Railroad Administration, 2008 Preliminary Railroad Safety Statistics Bulletin (Data as of July 2009), Table 9-4.		

Public crossings account for approximately half of the total number of crossings in Maine identified by FRA. The remainder of these crossings includes private crossings, farm crossings and utility crossings. These crossings are regulated by the railroads and the agreements with the private owners - are restricted in their use and in many cases are gated to prevent unauthorized use. In Maine, many private crossings are used by the forest industry, and by hunters and campers.

Crude Oil by Rail

In response to recent train accidents in the United States and Canada involving tank cars carrying crude oil, USDOT has taken action on multiple fronts to mitigate risks and ensure the safe transportation of crude oil, ethanol, and other hazardous materials by rail. The Federal Railroad Administration (FRA) and Pipeline and Hazardous Materials Administration (PHMSA) have related but distinct responsibilities in managing the risk from the transportation of hazardous materials. PHMSA produces regulations pertaining to the transportation of hazardous materials by rail, which are primarily enforced by FRA's safety staff, while FRA's staff also acts to enforce comprehensive safety regulations for rail transportation.

Orders and Advisories

FRA issued Emergency Order 28, and both FRA and PHMSA issued safety advisories, held public hearings, and notified shippers and carriers of the critical importance of public safety when transporting hazardous materials.

- FRA's emergency order addresses unattended trains, train securement, the use of locks, communication between train crews and dispatchers, and daily safety briefings for railroad employees and was published August 7, 2013.
- A joint FRA-PHMSA safety advisory on related issues was also published August 7, 2013.
- A joint FRA-PHMSA follow-up safety advisory was published November 20, 2013.

Rulemakings

In addition to the emergency order and safety advisories, FRA is updating applicable rail safety regulations and is collaborating with PHMSA on a rulemaking that addresses DOT Specification 111 tank cars. All rulemakings are subject to extensive study and analysis.

- On August 28, 2013, FRA and PHMSA held a public meeting with industry stakeholders to solicit input for a comprehensive review of the Hazardous Materials Regulations applicable to rail. PHMSA and FRA are collaborating to address comments received at the public meeting.
- On August 29, 2013, FRA convened an emergency session of the RSAC. During the emergency RSAC meeting, participants established three collaborative working groups to formulate new rulemaking recommendations regarding (1) transportation of hazardous materials by rail, (2) appropriate train crew sizes, and (3) train securement procedures. These working groups are meeting on a regular basis and formal recommendations are forthcoming.

As shown in Table 5-2, from 2004 to 2012, there were 38 incidents at public highway-rail crossings and three incidents at private highway-rail crossings in Maine.

Table 5-2:

Year	at Public Crossing	at Private Crossing
2004	4	2
2005	4	1
2006	7	—
2007	6	—
2008	6	—
2009	4	—
2010	3	—
2011	3	—
2012	1	—
Total Fatal Injuries	3	—
Total Nonfatal Injuries	20	1
Total Crossing Incidents	38	3

Maintenance of railroad crossings is a year-round responsibility and is integral to the safety of the system. In those cases where a railroad crosses a municipally maintained road, the railroad company, the State of Maine and the municipality all share responsibility for maintenance. The railroad company is responsible for maintenance of the pavement area within 18 inches of each outside rail, and the railroad signals and/or crossbuck signs. The Traffic Engineering Division of MaineDOT maintains the advanced warning signage, which may require involvement from the town to remove any obstructions, such as trees or branches. Municipalities are responsible for maintaining advanced pavement markings and striping, as well as road maintenance beyond the 18 inches from each outside rail.

MaineDOT has authority to set railroad train speed limits at railroad crossings. Crossing improvements, such as installing warning signals address safety concerns and enable trains to move at optimum speed to reduce wait time for motorists at the crossings and to improve overall rail system performance.

MaineDOT cooperates with the private Maine Operation Lifesaver programs. Operation Lifesaver promotes and teaches lifesaving habits related to highway-rail intersections, and also promotes an anti-trespass message. In an effort to reduce the number of collisions, injuries and fatalities at railroad crossings and along Maine's nearly 1,200 miles of active rail lines, the state has been very active in OLI, which is a nonprofit public education and information program. Maine OLI engages in various outreach efforts to raise safety awareness, especially in neighborhoods adjacent to railroad corridors, and to educate the general public of the danger of being on or too close to the tracks. Members of the state committee include officials representing Maine's railroads, private

industry, MaineDOT, and FRA. Operation Lifesaver safety information is available at <http://www.maineol.org/key.htm>.

5.1.3 Grade Crossing Safety Performance Monitoring

The success of MaineDOT's grade crossing safety efforts requires ongoing performance monitoring and documentation of accidents. The FRA data collection regime is oriented toward identification of patterns that can be identified so that corrective action may be taken. Accident investigations by safety professionals are focused on identification of ways to prevent future accidents. These investigations may provide a window into the railroads or motorists operating practices and adherence to policies and procedures and the rules of the road. Aggregate investigation data can identify system wide issues and trends.

Grade Crossing Improvement Program Selection Criteria

As noted in the Report on the Highway Safety Improvement Program for Fiscal Year 2008, MaineDOT has established selection criteria for the Section 130 Rail Grade Crossing Program. Crossing selection for major capital improvements for signals and/or surface will be based on a scoring system to identify crossings that most urgently need safety improvements.

50 Percent of This Score is Based on the Following Factors:

- Average # of Trains/day
- Train speed at crossing
- Average # vehicles/day at crossing (AADT)
- Posted vehicle speeds at crossing
- Crash history at crossing

The **remaining 50 percent** of the score is based on input from the operating railroad and from MaineDOT and Municipal officials. This input considers the following factors:

- Condition and level of existing warning devices at crossing
- Surface condition at crossing
- School Bus/Hazmat vehicle trips at crossing
- Quadrant sight distance and traffic conditions
- Operational experience (near misses etc.)
- Passenger train operations
- Pedestrian Movements
- Intersecting Streets and driveways

Eighty percent of the available annual Section 130 funding is allocated to major rail crossing improvements using the above criteria. Given the high number of at-grade crossings in the state, MaineDOT also directs 20 percent of the annual funding on minor updates to warning systems in rail corridors throughout the State. These improvements include updating cross-bucks with new highly-reflective units, updating crossing lights with 12" LED models for better visibility, improving signage and pavement markings.

5.2 *Passenger Rail Safety & Security*

Amtrak, as operator of Maine's intercity passenger rail service, is responsible for the safety and security of its operations. The Downeaster rail corridor is owned by the freight operator, Pan Am, who also shares responsibility for certain aspects of the passenger train operations, such as dispatching and track and signal maintenance. The FRA has adopted and issued rail safety regulations requiring the preparation, adoption, and implementation of emergency preparedness plans by passenger railroads, and in cases of shared corridors, the host railroad must participate in the plan development. These regulations became effective on July 6, 1998, and are codified in Part 239 of Title 49 of the Code of Federal Regulations (CFR).

The effectiveness of the emergency preparedness plan is contingent on the operating railroad and the host railroad maintaining effective working relationships with emergency response organizations. The plan must include information on how the railroads will develop and make available training programs for emergency responders who reasonably might be called upon to respond to a passenger train emergency. This plan must identify who will conduct the actual training - the railroad, the host railroad, the emergency responders themselves, or all three parties. All training must include and emphasize access to railroad equipment, location of railroad facilities, and communications interface. The railroads are required to invite emergency responders to participate in any passenger train emergency simulation; however, a railroad's plan must also address how the railroad will provide information to emergency responders who have not had the opportunity to participate in a passenger train emergency simulation. Oversight of this plan process is with the FRA.

Since the terrorist attacks of September 11, 2001, safety and security have become critically important to users and operators of our nation's transportation system. Amtrak has instituted a range of security measures aimed at improving passenger security. Examples of Amtrak security measures conducted in stations or on board trains include:

- Uniformed police officers or Mobile Security Teams
- Random passenger and carry-on baggage screening
- K-9 Units
- On-board security checks
- Identification checks

MaineDOT is committed to providing a safe transportation system for residents, visitors and those engaged in operating and maintaining the system. Appropriate safety oversight and adequate funding for capital improvements and maintenance are essential ingredients to achievement of this goal.

5.3 *Hazardous Materials Transportation Safety*

Railroads are required to comply with federal regulations regarding hazardous materials handling and reporting requirements. There are numerous safety and security concerns related to the movement and handling of these hazardous materials, particularly when these movements are within close proximity to populated areas along the state's rail lines which are shared with passenger service. Under authority delegated by the Secretary of Transportation, the FRA administers a safety program that oversees the movement of hazardous materials (including dangerous goods), such as petroleum, chemical, and nuclear products, throughout the nation's rail transportation system, including shipments transported to and from international organizations. The FRA also has authority to oversee the movement of a package marked as hazardous to indicate compliance with a Federal or international hazardous materials standard, even if such a package does not contain a hazardous material.

The FRA's current hazardous materials safety regulatory program includes the following:

- Hazardous Materials Incident Reduction Program;
- Tank Car Facility Conformity Assessment Program;
- Tank Car Owner Maintenance Program Evaluations;
- Spent Nuclear Fuel and High-Level Nuclear Waste Program;
- Railroad Industrial Hygiene Program;
- Rulemaking, Approvals, and Exemptions;
- Partnerships in Domestic and International Standards-Related Organizations (e.g., Association of American Railroads (AAR), American Society of Mechanical Engineers (ASME), Transportation of Dangerous Goods/ Canadian General Standards Board (TDG/CGSB); and,
- Education, Safety Assurance, Compliance, and Accident Investigation.

In 2007 and 2008, TSA issued rules pertaining to the transportation of certain types of hazardous materials by rail (including toxic inhalation hazards, or "TIH"). The TSA rules became effective in January of 2008 and require that railroads and shippers of certain chemicals, explosives and radioactive materials assign personnel to oversee such shipments, open their facilities to inspection and maintain location information of rail cars containing such chemicals en route and while on their premises. This rule complements requirements for security in and around chemical plants and is coupled with regulations on the routing of hazardous materials around cities.

5.3.1 Railroad System Openness and Trespassing

The railroad system in Maine is "open" and trespassers can access the right-of-way almost anywhere on the system at any time. This presents a serious and ongoing security issue, as well as a safety issue, because rail facilities, passenger rail stations and rail equipment may be targets of vandalism or other security threats.

Accidents resulting from individuals trespassing on railroad property are a significant safety concern. Much of the railroad right-of-way is not fenced, and passenger stations are intended to be open to public access. Trespassers on railroad property put themselves at serious risk of injury or death, and also threaten the safety and security of railroad operations, employees and passengers. FRA records noted only two trespass incidents in Maine in 2008 resulting in three non-fatal injuries and zero trespass casualties in 2007. The rural nature of much of the state and the somewhat limited operations in Maine impact these data. However, for reasons of safety and security trespass on railroad rights-of-way is a serious issue and trespassers are subject to arrest and fines.

CHAPTER 6 | *Trade Corridors – Context for Investment*

The purpose of this chapter is to provide context for investment in rail corridors in Maine. MaineDOT has determined that the most effective means to evaluate transportation investment projects, including railroad investments, is to consider such projects within the context of trade corridors. The DOT has identified several critical trade corridors and several emerging corridors. These corridors are illustrated in Figure 6-1 and serve as the basis for the recommended Critical Rail Corridors Program as illustrated in Figure 6-2.

The primary trade corridors include the Freight Triangle – linking Portland to Brunswick and the Lewiston-Auburn region. This multi-modal corridor includes highway, rail, marine and air as key transportation elements that support a vibrant and active freight region. The “Freight Triangle” links the major resources of Portland’s seaport, the Mountain Division rail line, Auburn’s intermodal rail services and warehouses, and Pan Am Rail and St. Lawrence & Atlantic main lines. These facilities combine with the highway network to provide a unified system to enhance mobility and competitiveness within the region.

The Searsport-Bangor Trade Corridor links the active seaport at Searsport with the Inland Port at Bangor, and includes highway, rail and marine infrastructure. Bangor serves as a hub with excellent warehouse capacity, an international airport, doublestack rail clearance to Montréal, and significant US-Canadian truck flows on the Interstate. Tying these assets together with a functioning new container port at Sears Island, upgraded rail capacity, and an inland port designation in Bangor, creates a powerful logistics system for this region.

Emerging corridors could include the Eastport Gateway and the Northern Gateway Trade Corridor. The Port of Eastport is the easternmost port in the United States, is significantly closer to Europe than other east coast ports and with 100 feet depth of water on approach channels, 64 feet of water at the pier at low tide and more than sufficient space to turn the largest ships afloat, is uniquely positioned and naturally endowed to accommodate any size vessel in service today. However, the lack of direct rail service could limit Eastport’s ability to market itself to capture a broad range of marine commerce that demands an effective rail connection to the North American rail system to economically move high volumes of freight to inland markets. MaineDOT has examined several alternative approaches to address this land side access issue, and the railroad network is within reach of this key port facility, if freight volumes were to justify a rail extension to the port.

The Northern Gateway Trade Corridor, using the legacy name of the railroad that had long served this natural resource rich region, is focused on the northern counties and the forest products industry. The recent abandonment and subsequent state acquisition of 233 miles of railroad in this corridor illustrates the challenges of meeting the mobility needs of this rural region that is a critical economic driver for the State of Maine.

6.1 *Critical Rail Corridors Program*

The Critical Rail Corridors Program is modeled after the successful Industrial Rail Access Program (IRAP). The overall goals of the program are:

To promote transportation system:

- Safety and security
- State of good repair
- Shared use of assets

- Modal choice

To improve the transportation system:

- System management
- System capacity, reliability, and speed
- Intermodalism, connectivity, and mobility
- Economic competitiveness and to enhance community quality of life

To continue and expand:

- Public-private partnership efforts
- Induce new business investment and growth
- Collaborative planning – state, regional and private sectors
- Multi-state/province coordination

Applying these goals, and building on the trade corridors previously described, six critical rail corridors were identified. These rail corridors include both freight and passenger rail operations, and target both current and future mobility needs.

The recommended Critical Rail Corridors are:

Southern Gateway Corridor – that encompasses the Freight Triangle and southerly to the state line. This is a shared use corridor today, with both freight and passenger operations and addresses statewide and regional mobility needs in this most densely populated region of the state.

Portland International Corridor – This emerging corridor links Portland with its regional suburban and regional neighbors, and provides potential multi-modal opportunities to address transit and freight needs, both near term and long term.

Eastern Gateway Corridor – The Eastern Gateway links Central Maine with national and international connections to eastern Canada and the continental United States, via the Southern Gateway. This corridor accommodates the heaviest tonnage/carloading for Maine's rail freight systems.

Bangor Multi-Modal Corridor – This Corridor mirrors the Searsport – Bangor Trade Corridor, and provides for linkage to maritime, highway, air and rail services, and serves a region with significant density of warehousing and transloading capacity. This corridor is one of two with full double stack rail clearance capacity.

East-West Corridor – This corridor follows the former Canadian Pacific line that cut across Maine connecting New Brunswick to Québec. Today the rail line is operated by Eastern Maine RR as far as Brownville Jct. and then by the Montréal Maine & Atlantic west into Québec. This corridor also includes the potential rail link to serve the Port of Eastport, as well as providing for connections south into the U.S. rail network and north through the Northern Gateway. This is the second corridor with full double stack rail clearances.

Northern Gateway Corridor – Linking Aroostook County's extraordinary natural resources with both U.S. and Canadian markets this corridor includes the 233 miles of rail lines acquired by MaineDOT in late 2010. The Northern Gateway Corridor includes a system of highways and railroads that are essential to the movement of forest products, fuel and agricultural products.

These six corridors establish the framework for the recommended state rail plan programs and projects, as

described in Chapter 8, Conclusions and Recommendations. The program builds upon Maine's long range transportation plans and strategies and supports other modal efforts, including the Three Port Strategy. This corridor approach gives recognition to the fact that no single mode of transport of either goods or people can meet all the needs of the state's residents, visitors and businesses.

Figure 6-1: Trade Corridors

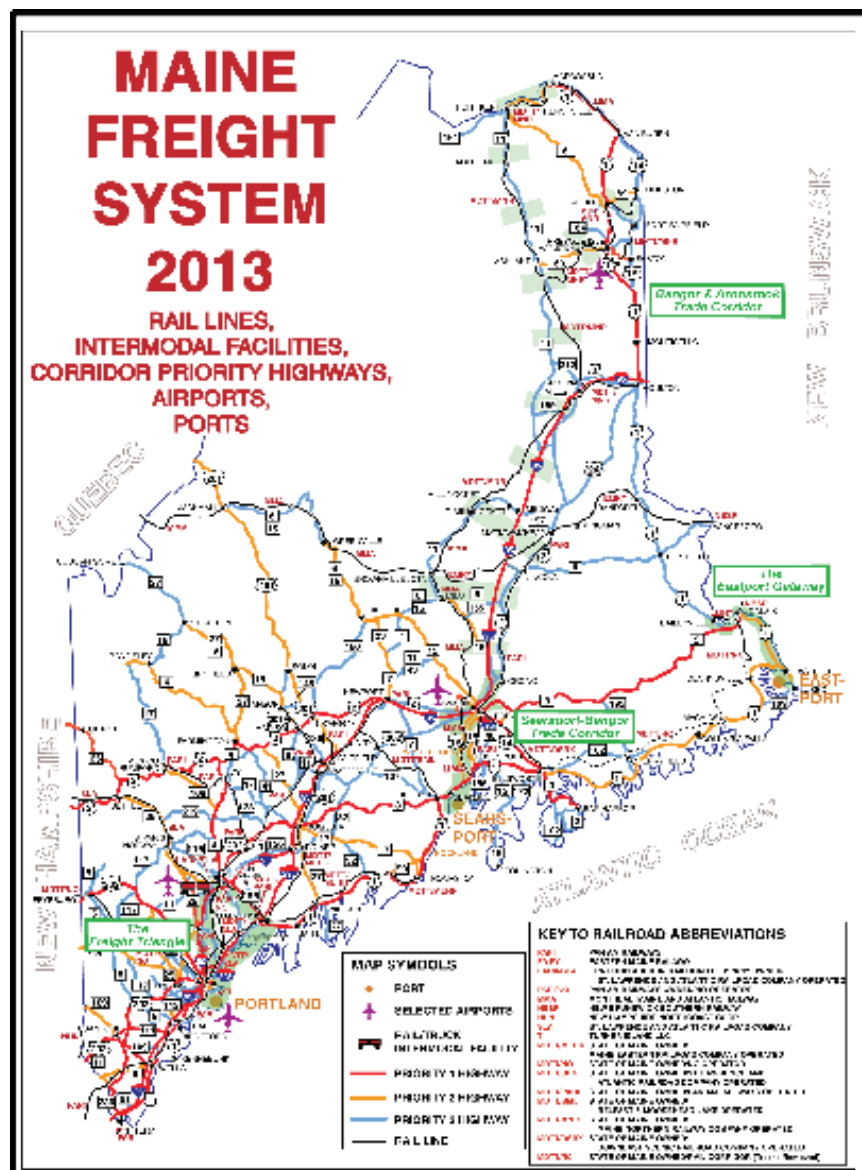
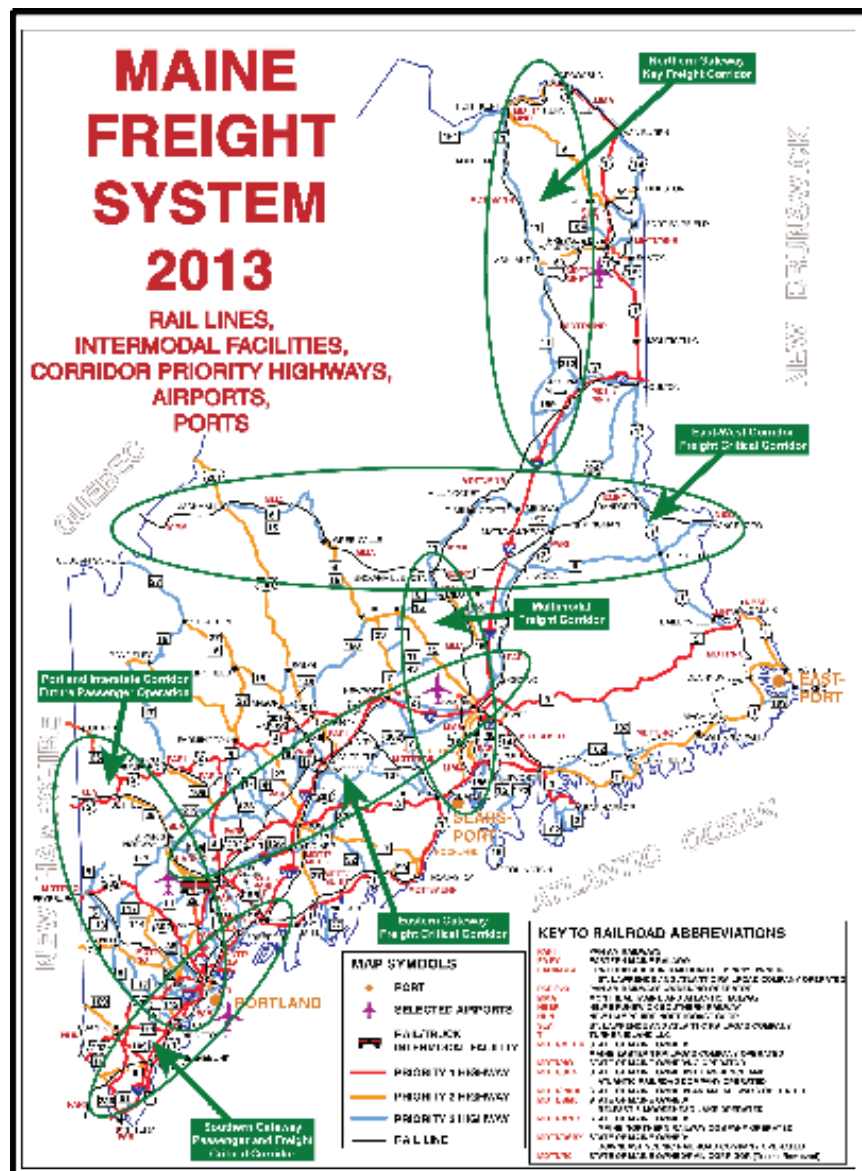


Figure 6-2: Critical Rail



6.1.1 Corridor Program and Project Development

This Critical Rail Corridors approach considers the transportation system as a whole, in which the whole is greater than the sum of its parts. Although this is a “rail” program, it is focused on the need to examine and consider all transportation assets within a corridor, not just railway assets. Proposed investments should enhance the capacity of the overall network, and in the case of goods movement, allow the market to operate on a level playing field for all modes.

Corridor programs and projects are evaluated using the following criteria:

- **Safety** – does the project improve the safety of the overall transportation network, and the rail system in particular?

- **Multi-modal** – does the project enhance freight and passenger rail service that provides a multimodal transportation system benefit?
- **Economic Development** – does the project enhance mobility needs of key manufacturing or natural resource industries?
- **Sustainability** – does the project provide a net reduction in overall greenhouse gas emissions from the transportation sector?
- **Public-Private Partnerships** – does the project include private investments/commitments?

In the course of the development of this state rail plan specific challenges and issues were identified by both rail users and non-rail users of the transportation system. These include:

- The back-haul problem of an imbalance between inbound and outbound loadings. Empty inbound moves increase costs to both carriers and customers, leaving some of Maine's businesses at a competitive disadvantage.
- The perceived disconnect between transportation investments and economic development and land use planning – resulting in often conflicting policies and programs.
- The overall perception that freight rail service in many parts of the state is less than adequate – inconsistent and unreliable transit time is the chief complaint. Car supply (both quantity and quality) is another factor that has caused some diversion to the highway mode.
- The perception that multi-modal services are constricted by lack of integration and adequate physical connections among the modes. This applies to both freight and passenger operations.
- The evolving nature of the state's economic base, with the resultant lessening of demand for low cost, long haul rail freight services.

Therefore, a thorough understanding the mobility needs within and between these critical rail corridors is essential to the development of programs and projects that will address these issues and challenges, achieve the overall MaineDOT goals, and make cost-effective use of scarce public funds. The following section places the Critical Rail Corridors within the broader regional context primarily in terms of goods movement.

6.1.2 Trade Corridors - Regional and National Context

Trade corridors, ports and multimodal terminals are all vital elements of the system that supports goods movement in Maine. Trade corridors are supported by transportation networks which connect trading partners. These networks typically are supported by a combination of multi-modal services (i.e. air cargo, rail, truck, pipeline and ocean carriers) which support regional, national and global trade relationships. Although this is the Maine State Rail Plan, the plan cannot and should not be viewed as a parochial document, but rather must be reflective of the regional context of trade and transportation.

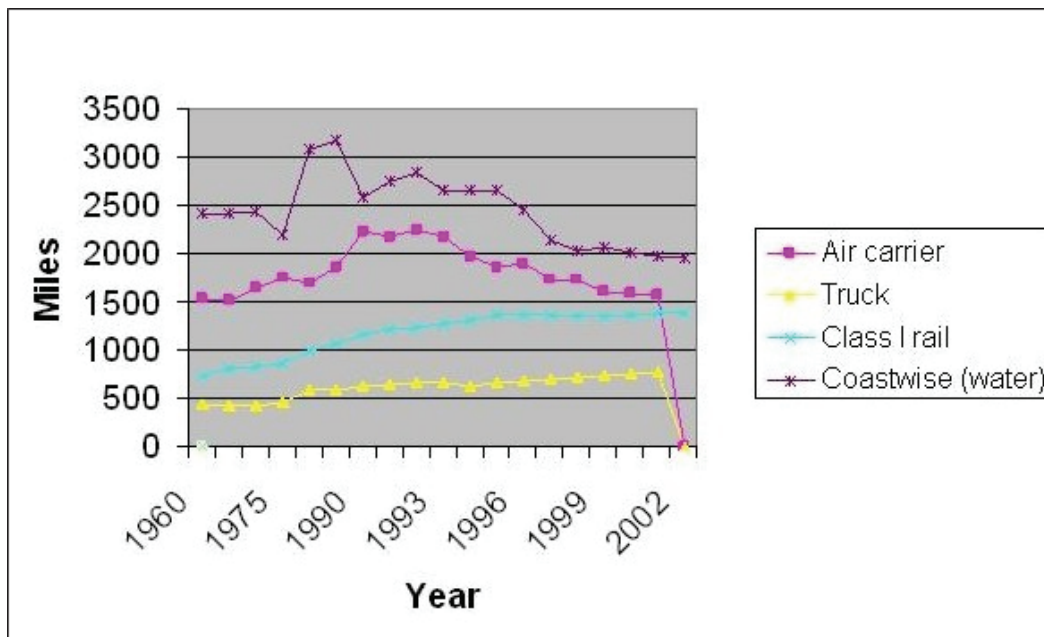
Railroad operations in Maine today are the result of overlays of numerous and often conflicting public and private initiatives and policies. Rail was the second transportation network to impact New England and the nation. Access to water borne transportation dictated the location of the earliest settlements, while rail connectivity dictated which communities developed as industrial and commercial centers in the nineteenth century. The federal highway system (which closely parallels the rail network) has had more recent impacts on location of industrial and distribution centers and land use patterns.

Rail freight movement into and out of Maine is primarily oriented towards Canada and the western and central United States. While traffic along the Eastern Seaboard was once an important rail freight market the majority

of Eastern Seaboard traffic now moves via truck. Although efforts are underway to increase rail's share of goods movement along the I-95 corridor, especially in the more congested segments between Philadelphia, New York, and New England, trucking still dominates this important regional corridor.

As a result of governmental deregulation, improved information technology and supply chain dynamics the average length of haul has increased for most modes of transportation. Figure 6-3 illustrates the changes in the average length of haul for air, truck, rail and water freight modes of transportation over the past 40 + years.

Figure 6-3: 40 Year Freight Transportation Average Length of Haul



The figure shows that both truck and Class 1 rail shipments have nearly doubled their average length of haul. This increases carrier productivity and expands market reach for shippers. By way of comparison, the longest interstate highway route in Maine, I -95, runs from Houlton, Maine to Portsmouth, New Hampshire and is 297 highway miles, whereas the average truck length of haul in 2001 was 781 miles. This average truck length of haul is approximately the same mileage at the distance between Portland, Maine and Cleveland, Ohio (B on the map). The average Class

1 rail length of haul in 2002 was 1,373 miles which is approximately the same distance from Portland, Maine to Waterloo, Iowa. (C on the map) Figure 6-4 illustrates these lengths of haul.

Figure 6-4: Average Class 1 Rail Length of Haul, 2002



Source: Mapquest

As the length of haul has increased, the need for corridor planning and multi-jurisdictional partnerships has increased. Planning for freight movements which cross state lines has become a major focus for the Federal Highway Administration. This length of haul factor, coupled with shipper demands for timely delivery of goods, has enabled the truck mode to capture a high percentage of freight movements to and from Maine, for both east coast markets and to and from the mid-west and southeastern U.S. Thus, while the basic framework of trade corridors in the region has remained consistent, modal alternatives to the railroads for long haul shipments have altered the landscape and levels of service in the region and in Maine.

This increased reliance on trucking does have serious public policy implications – as more trucks carry more tonnage, the public highway network faces serious issues of increased maintenance costs, congestion, and related air quality/emissions issues. The following Figure 6-5 illustrates the projected impacts of long haul truck freight on the national highway system by 2035. This figure illustrates the ever increasing density of freight traffic on the nation's highway system and the potential impact to levels of service, especially in and around major metropolitan areas.

Figure 6-5: Estimated Average Daily Long-Haul Traffic on the National Highway System:



Source: USDOT, FHWA, Office of Freight Management and Operations, Freight Analysis Framework, version 2.2, 2007

Although Maine seemingly escapes the worst direct impacts the congestion to the south does impact Maine shippers and businesses. Congestion downstream does create operational and supply challenges that will impact the competitiveness of businesses in the state, and suggests the need to protect modal alternatives within these corridors.

6.1.3 Regional Trade Corridors Impacting Maine Traffic Flows

In general freight seeks the lowest cost routes with the most efficient traffic flow. Trade Corridors typically bring carrier synergies together. While corridors may originally be established based on a specific mode, today they serve to connect modes, freight and users. For example, although the I-95 Corridor is primarily a highway corridor it does have many important intermodal connectors which feed rail and ocean freight into and through this important Eastern Seaboard region.

Density matters when it comes to freight movement and corridor operations. Higher volumes within a corridor require more support services and more frequent schedules. These higher volumes also provide shippers with more carrier competition, and in turn more price competition. Length of haul also matters in the kinds of services available within a corridor. Railroads generally seek 500-700 miles minimum length of haul for intermodal services due to high terminal costs. Truckers tend to focus on a minimum number of loaded miles per day to determine profitable customer relationships. Rail carload corridors are somewhat more difficult to define due to the individual nature of shipper and receiver sidings along the primary routes. Rail carriers look at line segments based on average ton miles generated per day, which is similar to how State DOT's rate highway corridors based on daily VMT ("Vehicle Miles Traveled").

Transportation is a derived demand and the need for transportation only exists when there is economic activity. The relationship between transportation and economic development is recognized as a critical concern for states and regions. Global trade and economic policies have resulted in the outsourcing of many U.S. manufacturing jobs to lower cost factory floors on other continents. Many economic development agencies now view transportation, distribution and logistics jobs as prized stepping stones to bringing back sustainable wages to their communities. This focus on job creation and partnering with transportation carriers to develop logistics parks and freight handling facilities has resulted in a number of corridor specific public-private partnerships throughout the United States.

State Departments of Transportation have recognized that trade flows most often result in multi-state freight movement. To reduce bottlenecks and congestion in these multi-state trade corridors, multi jurisdictional planning efforts have been undertaken to accommodate the seamless movement of freight across state boundaries. This coordination requires cooperation and communication among public and private sector transportation entities. Corridor coalitions have developed momentum as multi-state regional planning partnerships and Metropolitan Planning Organizations recognized that efficient goods movement benefits all the partners in a corridor.

Following are several examples of regional corridor planning and coordination efforts impacting Maine.

I-95 Corridor Coalition

The I-95 Corridor Coalition had its early roots in the 1990's as an informal group of state transportation officials who banded together to address incident management issues along the corridor. By 1993 the Coalition was formally established to enhance transportation mobility, safety and efficiency for the region and urban centers it connects. While the Coalition has its roots in testing intelligent transportation systems, today their emphasis is on

information management and seamless operation of transportation across multiple jurisdictions and modes. The I-95 Corridor spans some 1,917 miles running from Maine to Florida. More than 60% of the total length of the corridor is classified as a congested urban highway.¹

In September of 2007 the U.S. Department of Transportation announced six interstate routes that will take the lead in a new federal initiative to reduce congestion through the development of multi-state corridors (Figure 6-6). The I-95 Corridor is one of these pilot corridors, with average daily traffic of 72,000 vehicles daily with maximum daily traffic as high as 300,000 vehicles per day. Average truck traffic is estimated at over 10,000 per day with volumes reaching 31,000 per day in certain heavily traveled segments.

The I-95 corridor represents a \$4.7 trillion dollar economy, or approximately 40% of the United States gross domestic product. Twenty-eight percent of all United States exports or approximately \$197 billion worth of goods move along this route. Some 5.3 billion tons of freight move along this highway which impacts more than 38% of all United States jobs. Forty-six major sea ports are connected to the corridor along with 103 commercial airports and 22,000 miles of Class 1 railroad. As shown in Figure 6-7, the I-95 corridor connects markets all along the Atlantic Coastline in active commerce and trade.

Figure 6-6: Corridors of the Future



Source: U.S. Department of Transportation, Corridors of the Future Program, www.corridors.org

Figure 6-7: Mega region Trade Centers Connected by I-95



¹ FHWA website <http://www.corridors.dot.gov/i95.htm>

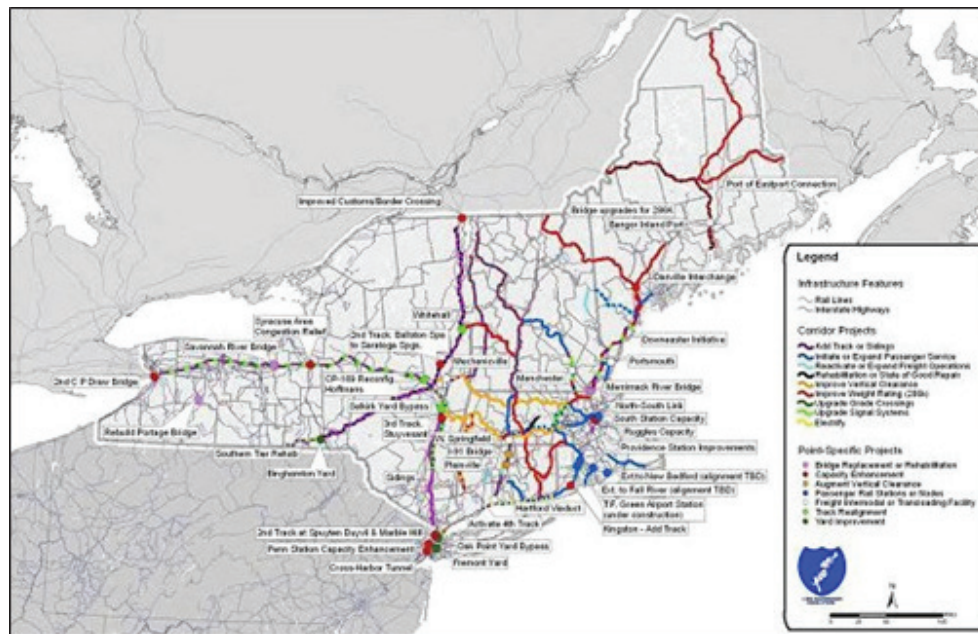
In Maine the I-95 corridor is approximately 300 miles long and links Canada to Maine and the Eastern United States. Driving at 60 mph, it takes approximately 5 hours to make the trip between Houlton, Maine and the New Hampshire border (Figure 6-8). A portion of I-95 in Maine is a tolled roadway and carries significant international traffic connecting Canadian markets to consumers in southern New England. Two rail intermodal terminals in Maine have direct access to I-95, which include the currently inactive Waterville Intermodal Terminal, and the active Lewiston-Auburn Intermodal Terminal. The Port of Portland is the primary deep water marine terminal in the state. Two commercial airports in Portland and Bangor are served by direct access I-95.

Figure 6-8: Maine Portion of I-95 Corridor



The I-95 Corridor Coalition conducted an assessment of the railroad infrastructure in the northeast United States. The Northeast Rail Operations Study (NEROPS) evaluated current conditions and identified challenges to improved railroad operations in the region. The report is summarized in the literature review of this report, but the map of potential rail projects is included here as Figure 6-9 to place Maine's rail network within this regional context. One important contextual issue this map illustrates is the essential relationship of the Maine rail system to the rail system in the Canadian provinces.

Figure 6-9: I-95 Corridor Coalition NEROPS



Source: I-95 Corridor Coalition NEROPS Phase II Report

Atlantica

The Atlantic Institute for Market Studies has defined the International Northeastern Economic Region as Atlantica. This region is bounded by the Atlantic Ocean, Lake Ontario to the West, The St. Lawrence River to the North and I-90 to Buffalo, NY on the south (Figure 6-10). This region shares common geography, economic trends and trade patterns. Atlantica as a region is at the center of three of the most important and largest trading relationships in the world. These three trade relationships combine the economic momentum of NAFTA, EU-NAFTA and the Suez Express route to Asia (Figure 6-11). Canada is the United States major trading partner. Thirty-eight of the fifty U.S. states list Canada as their largest trading partner. Canada is the largest supplier of oil and gas to the United States. Approximately 500,000 trucks per year cross Maine's international borders with 2020 projections suggesting a doubling of that volume.²

Figure 6-10: Atlantica Region



Source: Atlantic Institute for Market Studies

2 Truck Freight Crossing the Canada-U.S. Border. An Analysis of the Cross-Border Component of the 1999 Canadian National Roadside Study, September 23, 2002

Maine is unique in the U.S. in that it shares more miles of border with a foreign country than any other state in the continental U.S. The peninsula shape of Maine extends into Canada and separates Atlantic Canada from mainland Canada. This creates jurisdictional transportation issues for carriers seeking the shortest route between Halifax, Nova Scotia and mainland Canada, and explains Maine's railroad history of providing that key transport linkage.

The Port of Halifax is the primary deep water international port for the region and has had success in marketing this location as being a full day closer to Europe and Suez Express customers (Figure 6-11) than New York or Montréal. With natural deep water, Halifax seeks to capture international trade growth that cannot be accommodated by the Port of New York/New Jersey or other northeastern container ports.

The Port of Halifax has the capacity to handle 2.5 million twenty-foot equivalent units (TEU's) per year and is served by eleven of the top fifteen ocean carriers. Feeder vessels which connect New England secondary ports to Halifax allow for additional global trade access. New short sea shipping lanes have been proposed for this region which would create new connections between Portland, Bar Harbor, Searsport and Yarmouth (Figure 6-12).

Figure 6-11: International Port Trading Routes



Source: Atlantic Institute for Market Studies

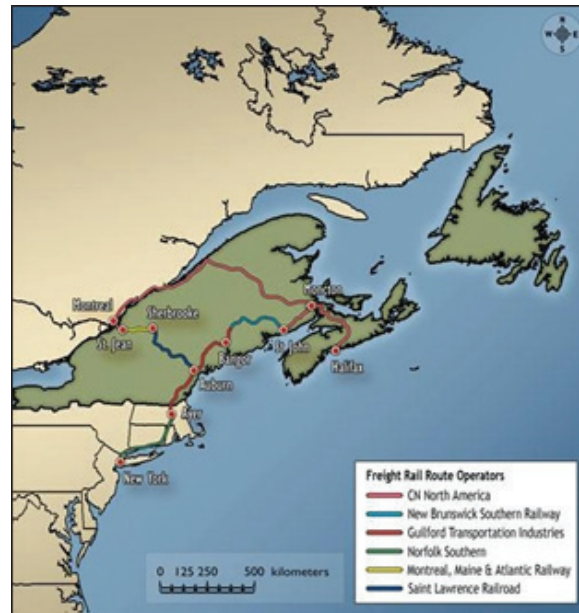
Figure 6-12: Marine Connections for Atlantica



Source: Atlantica.org

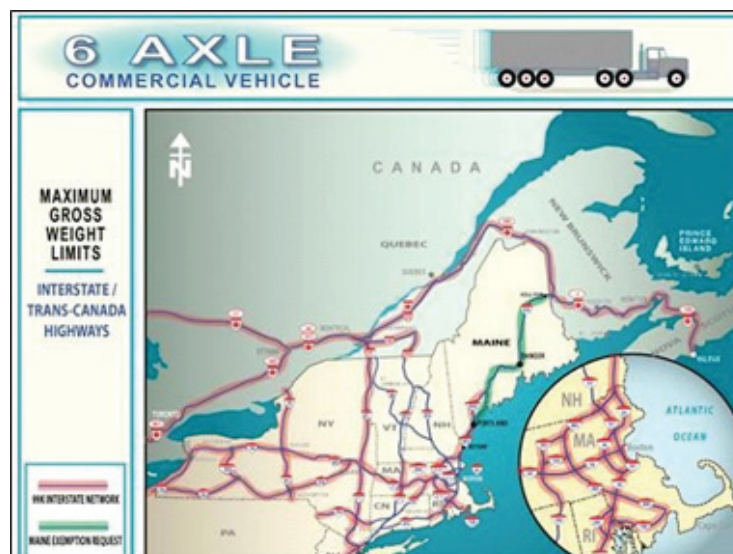
Due to rail network rationalizations of the past 20-30 years, the Canadian National railroad follows a somewhat circuitous route from Halifax, NS to mainland Canada (Figure 6-13). The more direct rail connections for Atlantic Ocean Carriers could be made via freight rail connections in Atlantica, at such ports as Portland, Searsport or St. John. These ports are served by regional rail carriers over routes formerly used by Canadian carriers to cross over Maine. Freight moving along many of these regional routes has declined in recent years leading to reductions in service and the need for multiple rail carrier interchanges to connect to market demand centers. Historically freight traffic to and from Montréal used the Grand Trunk route to and from the Port of Portland which took advantage of low cost water transportation and the shortest inland rail miles to this market.

Figure 6-13: Atlantica Rail Routes



Truck routes in the Atlantica region are subject to individual state and federal truck size and weight regulations. The State of Maine has recently moved to allow heavier trucks on I-95, in much the same way that New Hampshire and Vermont have grand fathered in heavier truck weights to allow for a more seamless flow of international cargo (Figure 6-14). Maine's action will likely increase the volume of trucks on I-95 and would provide for an improved highway network connecting commercial interests in New England and Atlantic Canada. However, this action may further erode rail freight opportunities in the region.

Figure 6-14: New England – Canadian Interstate Heavy Truck Route Network



Source: MaineDOT

CanAm Corridor

In August of 2009 a report was prepared for the Atlantic Provinces of Canada and the U.S. states of Maine, New Hampshire, Vermont and New York to identify transportation deficiencies that had economic development ramifications based on physical infrastructure or policy.³ The map in Figure 6-15 illustrates the study area. The region commissioned the study to address the fact that the region was lagging their competitors in the area of global trade and international development. The U.S. Appalachian region was bench marked in terms of transportation economics and metrics.

Figure 6-15: CanAm Region (shown in pink)



3 Northeast CanAm Connections: Integrating the Economy and Transportation. MaineDOT

Figure 6-16: CanAm Recommendation for East -West



As in Maine, trucking is the dominant form of transportation in the region. On the U.S. side of the border, two of every three tons of freight moving in the region moves by truck. The dominant flow has been from Canada inbound to the U.S. The report indicates that the flow of intra-Canada freight between Quebec and the Atlantic Provinces must incur additional highway miles using today's routes due to the land mass of Maine which juts into Canada. If truck size and weight issues could be harmonized within the region an east-west route linking Calais to Coburn Gore could improve transportation economics for both the U.S. and Canada (Figure 6-16). This new corridor would intersect the I-95 corridor and would parallel several railroads, potentially diverting traffic from these rail systems.

Figure 6-17: CanAm Intermodal Terminal Analysis



The report recommends the analysis of several inland ports to determine if enough volume exists to develop intermodal transportation options for inland economic interests. Today the region has six dominant north

south interstate highway corridors which include I-81, I-87, I-89, I-91, I-93 and I-95. Intermodal terminals were envisioned along the proposed east-west corridor, at specific junctions with improved east-west rail lines. These intermodal terminals were recommended to promote improved transportation access and anchors for new economic development opportunities (Figure 6-17).

The report concluded that for Maine's ports to better serve hinterland markets there need for improved railway and highway connections. Double-stack clearance is essential for a successful rail intermodal service, along with track and signal enhancements. Maine does enjoy two double stack clearance routes, including the SLR from Auburn to Québec, and the MMA from Searsport to Brownville Jct. to Québec.

The study suggested that an investment in an east-west intermodal corridor could yield significant benefits by improving the environment (moving more freight by rail instead of highway), and through the reduction of highway damage caused by heavy trucks. As the primary container ports on the east coast become more congested, and landside infrastructure and handling areas become fully subscribed due to global trade growth, Maine could benefit from the development of an "intermodal by-pass route" similar to the route recently developed by CN Railroad connecting Prince Rupert, BC to Chicago, IL.

Québec Corridor

Maine is one of the three New England states that border Québec, Canada. The Québec — Maine Corridor is one of the oldest trade corridors in North America. The Port of Portland was the primary ice free port for Québec until the development of the Port at Halifax. Trains from Québec moved many agricultural and forest products to Portland for export to Europe for many years, but that service has ceased. However, exports from Québec to Maine totaled

\$780 million in value in 2006, mostly moved by truck. This corridor connected Québec to all of the New England market which is estimated to be 8% of Quebec's total exports. Québec represents an important consumer base for products from Maine, including forest products, agricultural commodities, and more recently biotechnology products, composites, advanced electronics, and marine and environmental technologies.

This corridor is also an important link for tourism and is primarily served by highway. However, the corridor does have freight rail service operated by the St. Lawrence and Atlantic Railroad which connects to the Canadian National at St. Rosalie, Québec.

6.2 *Maine's Critical Rail Corridors*

As previously noted MaineDOT has embraced the corridor planning approach in its long range transportation plan, Connecting Maine. Recognizing that freight flows follow road, rail and port infrastructure, the Office of Freight and Business Services is developing and updating mapping and data that detail and monitor freight corridors and hubs. Individual site specific infrastructure decisions will affect the overall freight corridors and this data will enable consideration of projects within the corridor and regional context. Thus, this State Rail Plan suggests that the identification and evaluation of individual projects be considered in the context of these critical rail corridors as they fit within more general trade and mobility corridors.

Critical Rail Corridors are those trade corridors essential to move goods or to move people or indeed most likely serve multiple needs. The corridors have or could have multiple modes of travel, although trucking is the dominant freight mode in the state today. The primary trade and mobility corridors are illustrated in Figure 6-18

(same as Figure 6-2). These Critical Corridors are defined by demographics, current and projected trade and mobility demands, and the existing transportation infrastructure.

Within the Corridors are routes or networks of significance identified based on existing infrastructure and passenger and freight demand. Rail planning, for both freight and passenger services, can best be accomplished with this approach that considers multi-modal solutions to the mobility needs of corridors and regions. The key routes within each of the Critical Rail Corridors are:

Southern Gateway

State Line to Brunswick (PAR)

Boston – Portland – Brunswick (Downeaster – Amtrak)

Portland Interstate Corridor

Portland – Auburn – Bethel (SLR) Portland – Fryeburg (SMO)

Eastern Gateway

Portland – Bangor (PAR)

Bangor Multimodal Corridor

Searsport – Brownville Junction (MMA) Brownville Junction to Millinocket (MMA)

East-West Corridor

Vanceborough – Brownville (EMR/NBSR) Brownville – Jackman (MMA)

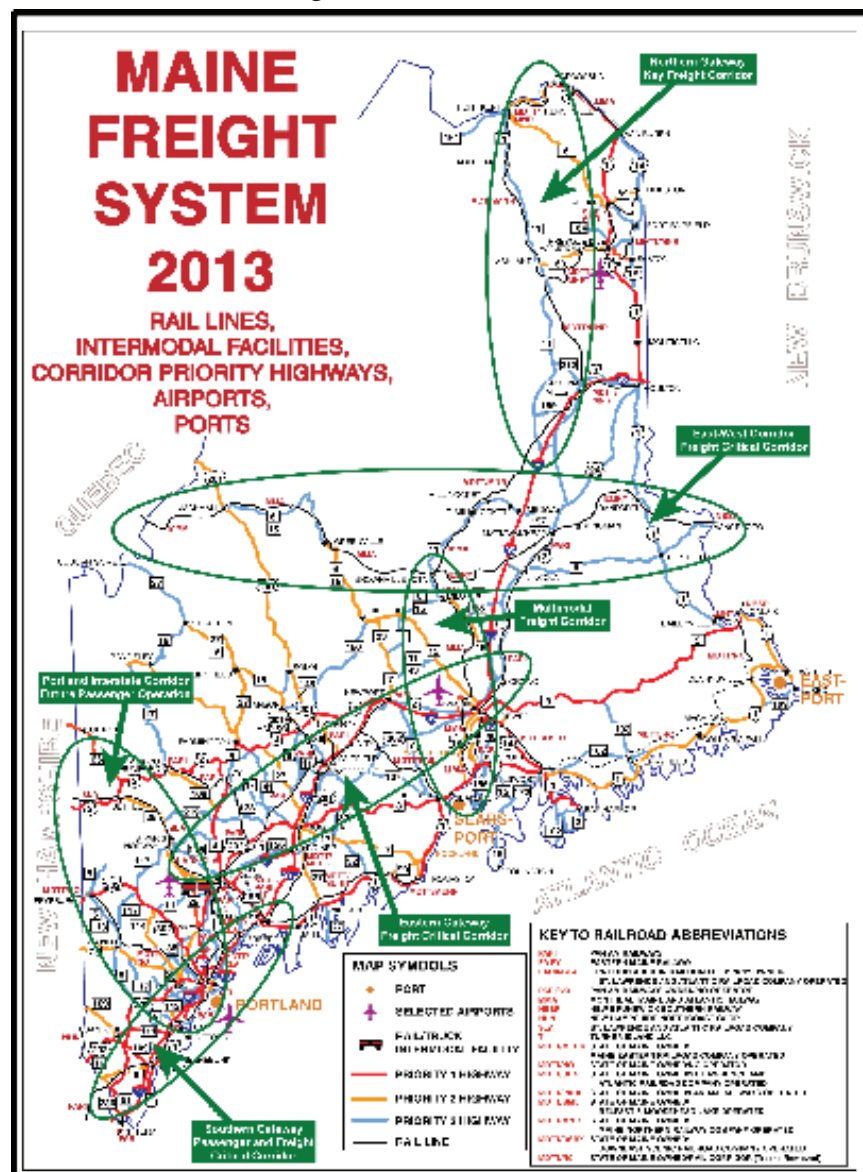
Eastport Rail Connection (SMO/EMR/NBSR)

Northern Gateway

Millinocket – Madawaska (SMO/MNR) Madawaska – Van Buren (EMR)

The identification process for these corridors has been both objective and subjective. Demographics, trade and travel projections, and existing infrastructure have informed the process that is certainly open to further refinement. The State Rail Plan is not a static document, but is meant to be modified and updated as conditions change and opportunities arise. The key criteria are population, employment and demand. State investment should target rail lines within corridors with high traffic density to protect and preserve current services, and enable growth of both freight and passenger operations. State investments should also focus on multi-carrier projects (for example, the Danville Jct. project) that enhance inter-carrier moves – and thereby improve system services, reduce transit time and increase system reliability. Rural regions with currently light freight rail traffic density must also be considered for long range needs.

Figure 6-18: Critical Rail



6.2.1 Corridor Descriptions and Issues

Southern Gateway

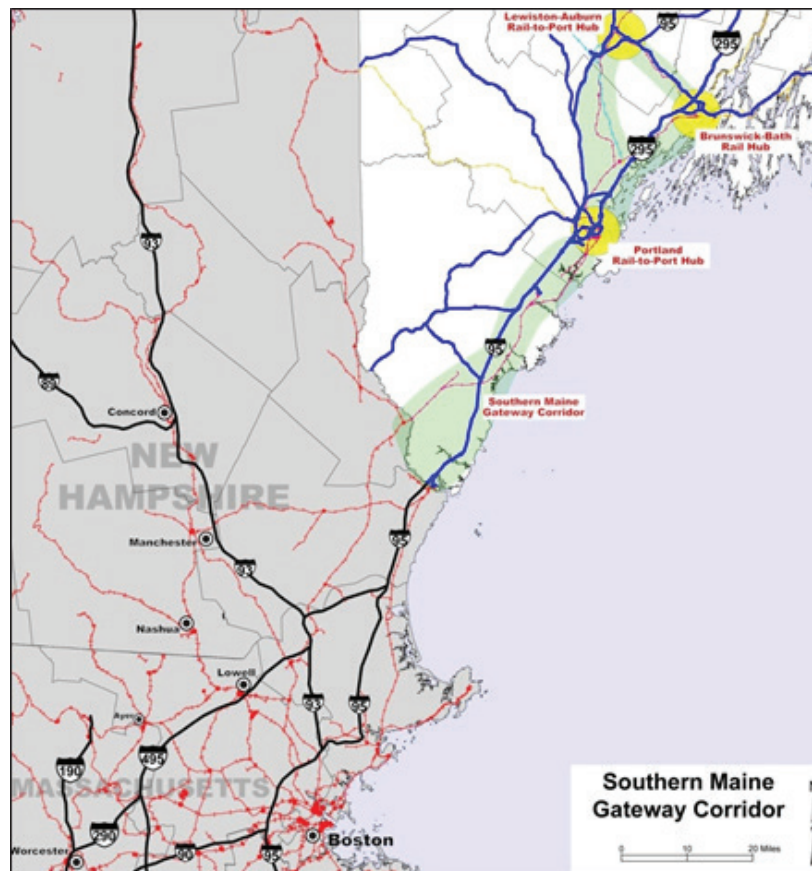
The Southern Gateway corridor serves multiple purposes, connecting Portland and southern New England for both goods movement and personal mobility. Truly an intermodal corridor the region is served by freight rail, passenger rail, intercity bus and regional bus services, and Interstate 95. Trucking is a key component of the corridor, but freight rail continues to play a small but significant role in meeting the freight transportation needs of the region. The map in Figure 6-19 provides an overview of the corridor, emphasizing the connectivity to the Boston metropolitan area, Coastal Maine, both north and south of Portland, and the Lewiston/Auburn region.

This corridor has been the subject of numerous studies, programs and projects, some of which may be classified as sub-elements of the corridor. For example, the extension of the Downeaster service to Brunswick marks a key incremental step in the expansion of intercity passenger rail services throughout southern and central Maine.

The Portland to Lewiston/Auburn route is also part of the federally designated Northern New England High Speed Rail Corridor. Rail planning in this corridor has included the design and permitting of a new intermodal facility at the Lewiston/Auburn airport, which would improve connections for auto, bus, rail and air travelers, and would potentially serve commuters working in the Portland region.

The extension of passenger rail service from Portland to Auburn would also achieve the stated goals and objectives of the Androscoggin Transportation Resource Center's (ARTC) long-range transportation plan—"to create an integrated multimodal metropolitan transportation system that would improve peak hour levels of service by eliminating (highway) delays and minimizing congestion; and, promote new and expanded use of rail lines for passenger and freight transportation."

Figure 6-19: Southern Maine Gateway Corridor



Another project within the corridor is the State's acquisition and renewal of the former Maine Central Railroad Lewiston Lower branch. In 2006, eight miles of the state-owned rail line between Brunswick and Lisbon was rehabilitated to FRA class I track standards. Phase II of the project would further upgrade the track westerly through Lisbon towards Lewiston to service several businesses and the Lisbon Industrial Park. The purchase of remaining right-of-way in Lewiston may also be explored. The MaineDOT has successfully worked with PAR to reopen the Lewiston Lower line to active service to Grimm Industries in Topsham.

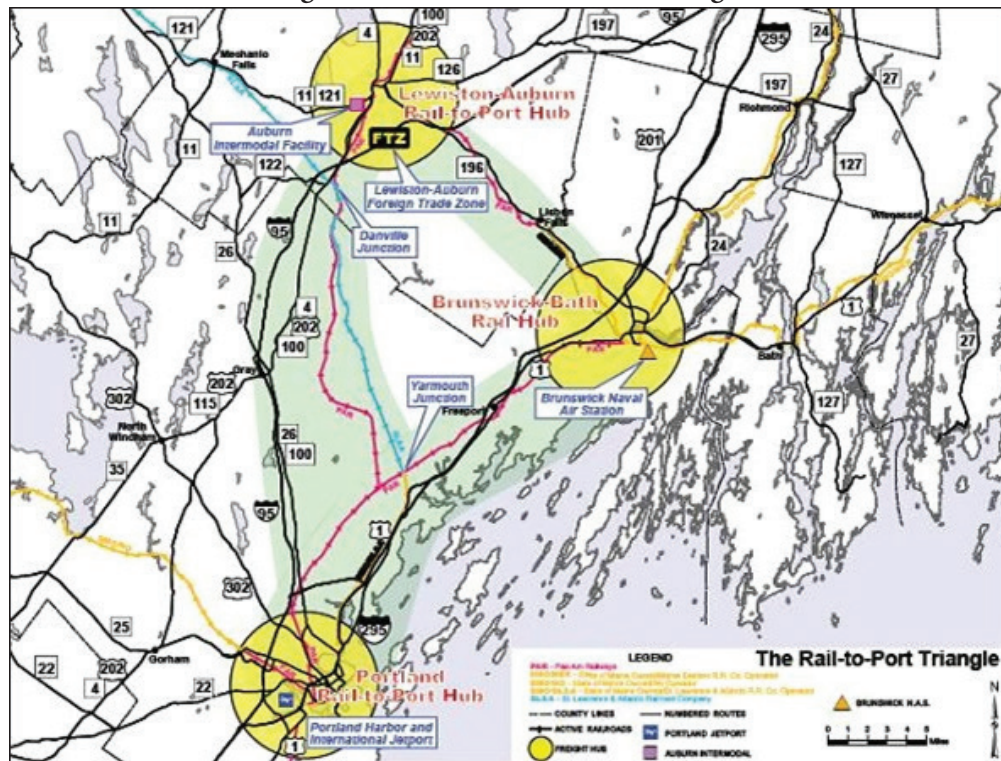
DOT and Pan Am Railway will pursue other shippers seeking to develop additional traffic on the line. With the improvements completed at the interchange yard between PAR and the SLR at Danville Junction the upgraded Lewiston Lower Road rail line has efficient connections to two major national rail systems and this factor provides

opportunities for shippers on the line to reach expanded markets for both sourcing material and exporting products from Maine. The redevelopment of the Brunswick Naval Air Station may provide an opportunity to extend a freight rail onto the base to serve new manufacturing operations.

The Rail-to-Port Triangle initiative, as illustrated in Figure 6-20, targets transportation investments connecting Portland, Brunswick and Lewiston/Auburn. This concept links both passenger and freight rail investments already in place with those currently being planned. The initiative connects regional transportation assets including the Portland seaport, the Auburn Intermodal Facility, Lewiston/Auburn's inland port connections, and the potential of a redeveloped Brunswick Naval Air Station.

The Rail-to-Port Triangle is an example of intermodal projects benefiting the movement of both people and goods. The investment in the Amtrak Downeaster extension to Brunswick and the acquisition of the Yarmouth-to-Auburn SLR line support this strategy. Concurrently a major planning study is underway to address the shortcomings of Auburn's I-95 Exit 75 is an effective collaboration of the Maine Turnpike Authority, MaineDOT, the city of Auburn, and the ATRC. The purpose of this study is to identify and implement more efficient connections between I-95 (the Maine Turnpike), the Auburn Intermodal Facility, and the L/A Freight Hub's connection to the Port of Portland via the Maine Turnpike. This strategy also highlights the importance of seamless connections between highway, rail, and ports, be they coastal or inland.

Figure 6-20: The Rail-to-Port Triangle

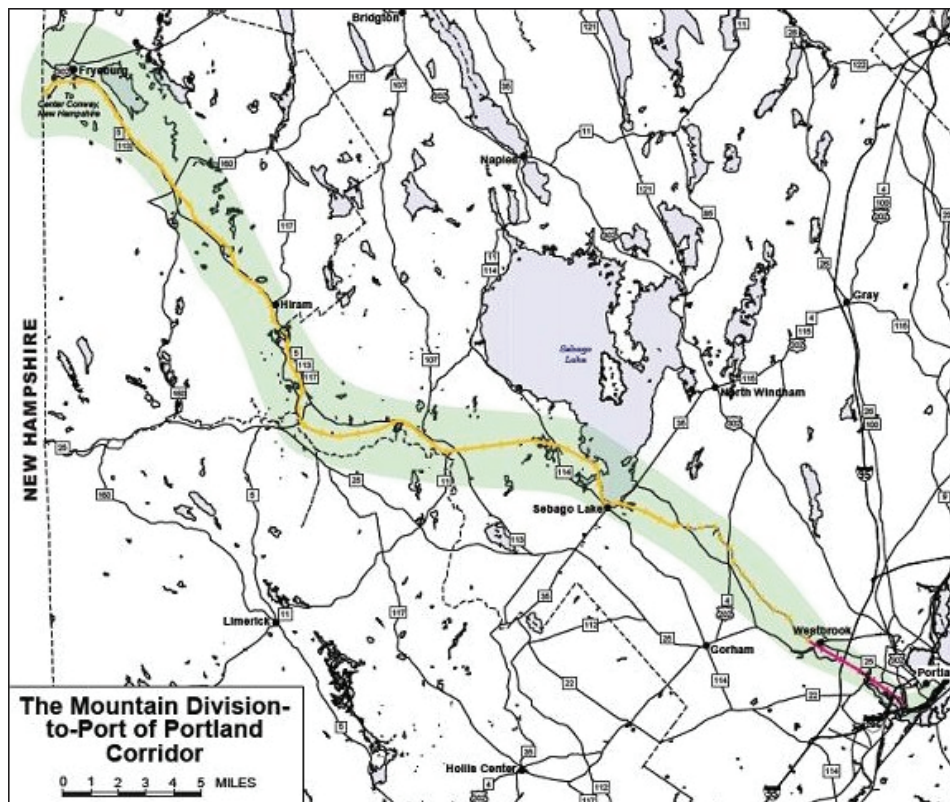


Portland Interstate Corridor

This multi-purpose corridor connects Portland and the Southern Gateway Corridor with key railway and highway links to New Hampshire and the Province of Québec, and City of Montréal. The historic and cultural relationships between Montréal and Portland have been well documented elsewhere, and this Interstate Corridor has the potential to reinforce these relationships with safe and efficient transportation connections.

This corridor would link the Ocean Gateway Mega Berth in Portland and a future potential rehabilitation of the Mountain Division rail line to Fryeburg (Figure 6-21), with a possible link into New Hampshire's scenic Conway region. Studies have identified both the potential and the challenges for both freight operations and tourist/excursion passenger services along this route. Commuter connections from Westbrook and Windham to Portland have also been studied, identifying the Mountain Division rail line as a potential multi-purpose transportation corridor in the future.

Figure 6-21: Mountain Division-to-Port of Portland Corridor Initiative



Along the north side of this corridor the now partially state owned SLR right of way provides for an effective connection from Portland to the Lewiston/Auburn region. This portion of the corridor is experiencing public advocacy for increased levels of transit service. This metropolitan region has been well served by both I-95 and I-295 for many years. However, changing social and economic conditions have prompted both the state and local governments to give consideration to transit alternatives. The Portland North study did just that, and its findings discussed future transportation investment decisions in this corridor.

Eastern Gateway

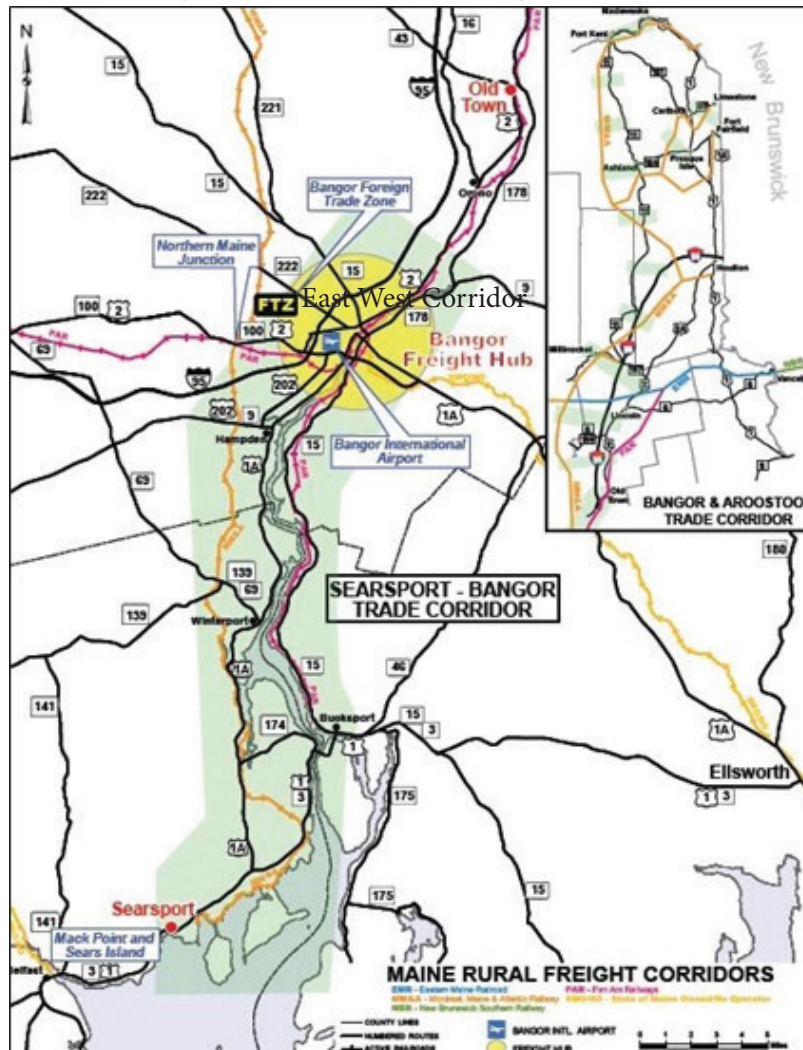
The focus of the Eastern Gateway is on freight since the majority of Maine's paper industry is located along this corridor. With the Pan Am Main line, connections to both SLR and MMA, and excellent highway services along I-95 (Maine Turnpike) the paper industry is well positioned to bring in raw materials and ship out their finished products. This critical corridor links the region to raw materials from the north, and to markets to the south. Maintenance of the rail alternative is essential to maintaining and growing the economy of the state and region. This corridor provides for rail connections for both MMA and EMR (NBSR).

Bangor Multimodal Freight Corridor

This corridor builds upon past accomplishments by targeting investments to help realize the economic potential of the Searsport to Bangor region. The combination of the existing assets of a deepwater port in Searsport and the MMA double-stack international route connections into Canada supports further investments in the Port of Searsport, upgraded rail capacity, and an inland port designation in Bangor, the corridor serves to provide an effective connection from the Searsport to the Bangor Freight Hub. At that junction, container cargo can access the MMA system westbound and the Pan Am system southbound. Access at the Hub to I-95 makes this junction the center of transportation efficiency for the forest-products and energy industries of the future.

Although freight oriented, this corridor also has developing passenger mobility needs, including connectivity within the region as well as for links to Portland and southern New England. In the short term intercity bus services are expected to meet demand. However, maintaining and improving the freight rail system will enable possible future shared use of the railroad corridor.

Figure 6-22: Multimodal Freight Corridor



This corridor follows the route of the former Canadian Pacific “Short Line” across Maine’s mid-section – connecting New Brunswick to the rest of Canada. State highway routes 6 and 15, connecting at the west end to U.S. Highway 201 generally follow the east-west axis of the rail line that is now operated by two separate railroads. The MMA operates the route to the west while the EMR makes the east end connection. Both railroads meet and interchange traffic at Brownville Junction.

The East West Corridor connects with the previously described multimodal corridor that connects Searsport, the Bangor Freight Hub and Brownville Junction. At Brownville Jct. the MMA continues west to Montréal, and the EMR connects east to New Brunswick and the port at St. John. Improvements in this corridor will enable faster and more reliable rail options for shippers and support the marketing of a major container port at Searsport. This corridor could realize major benefits to the public as renewable energy opportunities for rural Maine develop. Transmission access and capacity is a central issue in the growth of the energy industry sector in Northern, Central and Eastern Maine. The East West Corridor can address these logistical constraints and encourage growth of these new market opportunities for the region.

A subset of this East West Corridor is the Eastport Gateway Corridor that links Bangor-Calais-Eastport. Key assets are the Port of Eastport, and a new bridge and border crossing in Calais. Future rehabilitation of the rail corridor from Calais to Perry would add a rail shipment option the area has not had in more than 30 years. A proposed project would rehabilitate the rail line from Calais to Perry to FRA Class 2 standards (25 mph operations) and construct a truck to rail transload and storage facility in Perry. A project of this type would allow shipments to and from the Port of Eastport to be put on rail for shipment allowing the Port of Eastport to be more competitive in attracting cargoes and to give Washington County businesses access to freight rail transportation. Expanding the project could provide for additional cargo handling equipment at the Port of Eastport and would make loading and unloading operations more efficient, encouraging further growth.

Northern Gateway Corridor

The Northern Gateway Corridor parallels a portion of I-95 and more closely follows the right-of-way the former Bangor & Aroostook Railroad. The railroad right-of-way within the corridor connects Aroostook County with the Bangor Hub, the Port of Searsport, and Pan Am Railways to the south, and to the Province of Quebec to the west, and New Brunswick to the north and east. A well developed highway network also serves this corridor, including State Routes 11 and 2, as well as U.S. Routes 1 and 1A that skirt the eastern border of the state. The rail system in the corridor is the most important north/south logistical link in northern Maine.

The former rail operator, MMA, abandoned the approximately 233 miles of main line and branch line trackage in this corridor. Rail freight service would have been eliminated to Presque Isle, Caribou, Houlton, Easton and all communities on the line between but not including Millinocket and Madawaska.

In response to this action MaineDOT identified this corridor as one that is critical to the economic and transportation well-being of the region and state. Funding was secured through a statewide bond referendum to purchase the rail lines to enable continuation of essential freight rail services along the main line segment and branches to protect and enhance the economic competitiveness of the region, its key industries and communities. This region had already been severely impacted by the national recession and especially the down turn in construction.

MaineDOT successfully negotiated with MMA to acquire the rail corridor, consistent with long standing state of Maine policy and practice, to be followed by immediate capital improvements to the rail lines. Rehabilitation

work was undertaken in August, 2011, using USDOT TIGERII funding, including replacement of rail and ties, surfacing of track, and improvements to bridges and drainage. The rehabilitation work will be completed in the fall of 2013. The goal of the capital improvements is to restore the main line to FRA Class 2 and 3 rating and the branches to FRA Class 2, thereby enabling a significant decrease in run times, improving on time performance, increasing reliability to not only service the existing client base, but to also grow that base and attract new business customers. The State of Maine has leased the lines to the Maine Northern Railway for freight operations and ongoing maintenance.

An improved freight railroad system would provide a safe, affordable and accessible transportation for companies to send and receive freight nationally and internationally, thereby enhancing the economic competitiveness of not only the immediate region, but the entire state. The project would lead to a state of good repair (SOGR) for this essential rail corridor thereby reducing the region's dependence on trucking. Without the renewal of this vital regional infrastructure, firms in the region would utilize more trucking which would have the combined effect of increased road damage, increased air pollution from diesel emissions, and more costs for transport of goods.

The long-term outcome of this effort will enable businesses in the region to more effectively manage their transportation costs and allow for greater investments in their workforce and productivity. Additionally, the project would enhance the economic viability of the region and increase the safety of the general population by diverting heavy truck traffic from town centers along the major roadway routes of US Route 1 and Maine State Route 11.

6.2.2 Corridor Factors

Population and Employment

As reported in more detail in Chapter 4 Maine is experiencing slow statewide population growth rate, and demographic disparities throughout the state impact on the economic situation of the various regions. Often viewed as having two regions, north and south, economists have identified, by history and geography, three distinct regions in Maine: coastal, central, and rim counties. While the southern coastal regions of Maine have seen population growth the central region and rim counties have declined in population in the past decade.

Maine's southern and mid-coastal counties—Cumberland, Hancock, Knox, Lincoln, Sagadahoc, Waldo, and York—are growing fairly rapidly. This growth can be attributed to in-migration, driven in part by Maine's attractiveness and desirability for retirement and vacation homes. Increasingly, people are moving into the southern counties and continuing to commute to jobs in New Hampshire and Massachusetts. These coastal counties will increasingly experience roadway congestion, especially in the summer months, and may benefit from congestion-relief actions for non-automobile travel choices, such as passenger rail, intercity bus, and inter-coastal and intra-coastal ferries, to serve both the seasonal visitor and the year-round resident.

The central counties of Androscoggin, Kennebec, and southern Penobscot are located inland and have large "service center" communities. Once reliant on manufacturing industries for employment, the central counties are transforming to service economies. Despite the loss of manufacturing jobs, industrial output in some sectors is still strong, especially in the paper industry. The result is that the central counties have a high export base and will continue to require a full range of intermodal freight facilities and services.

The "rim" counties of Aroostook, Franklin, Oxford, northern Penobscot, Piscataquis, Somerset, and Washington are located on the northern, eastern, and western borders of the state. These principally rural counties rely on the natural resource-based economy—forestry, farming, and fishing. Tourism, one component of natural resource-

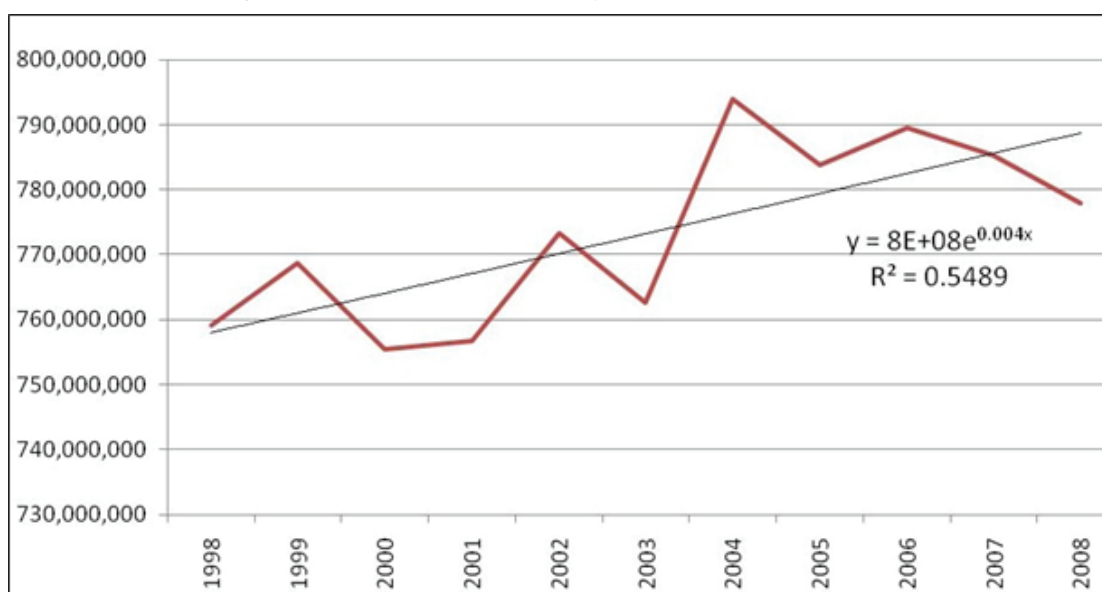
based industries, is expected to grow significantly in the rim counties, with a related demand for transportation infrastructure to support that growth. Population growth has remained fairly flat or has declined in recent years. Average income in rim counties is lower than in coastal and central counties. Maine residents from this region are moving either to other areas within Maine, or outside of Maine, to seek employment opportunities.

A recent report from the Maine Center for Economic Policy entitled *Physical Infrastructure Investments in the Rim Counties*, suggests that rim counties might benefit from their proximity to urban areas outside of the U.S., such as Québec City or Edmundston, New Brunswick.

Travel Demand

One aspect of population growth to be considered in transportation planning and land use planning is vehicle-miles traveled (VMT). VMT statewide is expected to continue growing into the foreseeable future, but at a slower pace than in the past several decades. In Aroostook County, for example VMT have declined since 2004, with pronounced declines in the past several years. (Figure 6-23)

Figure 6-23: Aroostook County VMT Trends, 1998-2008



Source: MaineDOT

Currently, 93% of annual VMT in Maine is by private vehicles, and this includes freight movement by trucks. These private vehicles will likely remain the primary means of mobility. According to the Federal Highway Administration (FHWA), truck and containerized shipments are expected to double in the next 20 years as the globalization of the economy continues to unfold. Thus, the growing demand on the highway network and increasing congestion and travel delays will make highway travel less predictable. As congestion and delays increase the costs of travel for people, goods and services will also grow, and will ultimately have a negative impact to Maine's economic competitiveness and quality of life. Even as Maine avoids the worst of congestion within its borders, downstream congestion in the highway system will have a direct impact on Maine's businesses. Therefore, to remain competitive, efforts to manage congestion and reduce the rate of growth in VMT are being explored by MaineDOT and the regional planning organizations throughout the state.

6.3 *Modal Diversion as a Public Policy*

MaineDOT believes in investing in transportation options that lower business shipping costs and must be business driven. Investment in railroad infrastructure improves efficiency and reliability. Most of this investment is typically financed by private railroad companies with revenue generated from freight operations. In Maine the reduced level of freight traffic has resulted in lower levels of investment in the rail network, leading to decreased levels of service and reliability. Concurrently there is a groundswell of public interest to make better use of the railroad network.

There is increased recognition that well thought out public investments in freight railroads may produce public benefits that are quite different from the market based decisions of the railroad companies. Today, Maine is about 85% truck-dependent for moving commercial freight. This modal dominance impacts the state and its residents through increased costs for highway construction and maintenance; higher costs to transport some goods; reduced market opportunities for Maine based companies; and increased use of fossil fuels and resultant air quality issues. Some public officials and the general public have urged that more heavy freight be handled by the more efficient rail and water transportation modes, when these modes are reliable and make economic sense for shippers.

Recent reports, studies and plans by governmental agencies have recommended modal diversion as one solution to addressing the multiple problems of growing congestion, fuel consumption and air pollution as well as an economic development tool. The MaineDOT has been pro-active in efforts to encourage the use of rail for goods movement through the IRAP and FRIP⁴ funding program for projects that help lower transportation costs to Maine business. These programs have been effective in encouraging public-private partnerships that engage both shippers and the railroads in project planning, funding decisions and cost sharing.

It must be clearly recognized, however, that freight movement decisions are often far removed from Maine and are driven by cost, schedule and supply chain management principles and in reaction to market forces.

6.3.1 Corridor and Regional Approaches to Modal Diversion

There is recognition by public agencies of the importance of freight transportation and a corresponding push to link state and local transportation investment, especially freight transportation investment, to economic development. Adequate transportation is considered to be one of several site location requirements and key factors (e.g., utilities, work-force skills, and tax structure) that affect a state's business costs, markets, and overall competitiveness for attracting business investment. Essentially, all businesses require some level of transportation access to labor, materials, and customers in order to operate and prosper. As such, transportation is a factor that influences the outcomes which local and regional economic development agencies are seeking to achieve – increasing their areas' business attractiveness, and thereby expansions, retentions, and startups.

To successfully make railroads more competitive in some markets specific investments must be made to incentivize the stakeholders – shippers and railroads. An analysis of the feasibility and effectiveness of proposed projects must be conducted to evaluate the overall cost benefit of potential investments.

Some approaches to modal diversion include:

- Improved connections between the rail system and the state's marine and inland ports are viewed as ways to

⁴ IRAP is the Industrial Rail Access Program; FRIP is the Freight Rail Investment Program, both operated by MaineDOT with state funding, and require private party cost sharing of at least 50% of project cost.

increase rail's market share as well as to enhance port utilization.

- Improved use of technology to address such as issues as “deadhead” miles – meaning the need to move empty equipment (both trucks and rail cars) to meet Maine shipper needs. As Maine companies produce more goods than are consumed, there is a significant amount of “deadhead” miles being traveled on Maine’s transportation network, increasing transportation costs for shippers, carriers, and consumers. Advances in technology, however, may provide new tools for use by Maine businesses in managing their transportation and distribution functions while making these functions more efficient. Such advancements, including the use of the Internet to provide load matching services and identify back hauls, may provide Maine businesses the opportunity to improve their efficiency and lower their overall freight transportation costs.
- Enhancing connections between the current modal networks to improve the functioning of the overall freight transportation system. This may include roadway enhancements to provide more effective links to rail and marine terminals.

MaineDOT will continue to engage private sector stakeholders in order to develop a better understanding of current and future freight transportation needs through the continued sharing of data and information with freight stakeholders, regional economic development interests and the general public and the development of a state freight plan.

6.3.2 Traffic Density Versus Public Benefits

The quality of life and economy in rural Maine is dependent on an efficient, effective, and coordinated multimodal transportation system that provides choices for the movement of people and goods and enables transfers between modes when and where they are needed. Private sector business decisions do not, nor should they, take this factor into account. Thus, the decision of the state to serve as “owner of last resort” of threatened rail lines is consistent with good public policy. MaineDOT has effectively performed this function, especially in rural regions that do not meet the freight density required for private sector investment.

Similarly, public transportation for personal mobility often requires state intervention to assure that residents in lightly populated regions have transportation options beyond the private automobile.

CHAPTER 7 | *Funding Options for Railroad Investment*

The purpose of this chapter is to log out and discuss funding sources available for investment in rail in the State of Maine. Maine has an aggressive agenda for rail development. Maine's citizens and businesses have expressed support for increased railroad freight and passenger services that would support increased economic development, environmental sustainability, and enhanced competitiveness for Maine based industry. In the development of this state rail plan many projects have been identified that would require significant investment of capital to implement. Some projects may be funded with private funds, while others will clearly require public funding. Joint efforts – public/private partnerships – are also appropriate for some projects. Implementing the vision for Maine's railroad system will require securing adequate funding levels for current rail programs and future rail initiatives.

Funding for railroad projects and programs originates from a variety of sources, including federal, state, municipal and private sources. Federal funding grant programs for rail projects are generally discretionary and awarded on a competitive basis. The federal government also offers low interest and guaranteed loan programs. In Maine state funding has been made available for railroad improvements, but is subject to appropriations and voter approved bond funds. Private railroad investment has been the primary source of funding for freight projects, while public funding is the primary source for passenger projects.

This chapter will review the range of funding and financing options for transportation investments in both passenger and freight rail projects. Evaluation of costs to benefits of projects is a critical factor in determining the most appropriate source of project funding. Rail project evaluation criteria were presented in Chapter 1 and form the basis for cost-benefit analysis of projects and policies.

7.1 *State of Maine Rail Funding and Financing*

The lack of a predictable, consistent and dedicated federal source of financing for rail infrastructure investment projects has required the states to step up with state funded programs. The State of Maine has been pro-active in providing funds for acquisition of railroad rights-of-way (corridors) as well as with infrastructure investments targeted to specific service needs. Despite the lack of a consistent funding stream for rail projects, there are state programs that have been used for rail projects. Investments in both passenger and freight rail have been made to provide Maine's citizens and businesses with cost-effective mobility choices.

The traditional means of freight rail investment – private sector funding of operations and maintenance – is subject to market fluctuations that often lead to deferred maintenance that in turn results in reduced levels of service and further loss of market share. Investment by private sector railroads is subject to their ability to earn revenue in excess of costs of conducting business. Lack of investment in the rail system degrades Maine's business climate and results in increased truck traffic, pavement consumption, and stress on Maine's highway system as shippers opt for truck service over rail. Continued under investment may also result in possible loss of effective connections to the national/international railway network. Thus, there is an identified role for government intervention dealing with non-market driven investments that serve a public purpose.

Maine has undertaken efforts to protect and preserve the state's railroad corridors, infrastructure and services. These efforts have included the purchase of nearly 400 miles of rail lines since 1987; investments in railroad infrastructure; development of public/private partnerships such as the Industrial Rail Access Program; and other

related investments such as the Auburn rail/truck intermodal. The state has invested more than \$145 million in railroad infrastructure since 1987, as illustrated in Table 7-1.

Table 7-1: Railroad Investments in Maine 1987-2008

INVESTMENT	AMOUNT	FUND SOURCE
1987- Acquire Rockland Branch (52 miles) and Calais Branch (126 miles)	\$759,000	Gen. Fund
1991- Acquire Lower Road (33 miles), Lewiston Lower road (9.5 miles) and remaining rockland Branch (4 miles)	\$5,200,000	G.O. Bond
1994- Acquire Eastport Branch, Ayers Junction to Perry	\$18,400	Gen. Fund
1995- Acquire Belfast and Moosehead Lake RR	\$950,000	FHWA
1996- Acquire Portland, Eastern Prom (1 mile)	\$800,000	Gen. Fund
1998- Acquire Mountain Division (40 miles)	\$1,100,000	FHWA
		G.O. Bond/
2001- Acquire Union Branch (3 miles)	\$3,150,000	FHWA
2007- Acquire Portland-Yarmouth on SLA	\$4,800,000	G.O. Bond
2008- Acquire Mountain division (5.16 miles)	\$805,000	G.O. Bond
SUB-TOTAL	\$17,582,400	
Auburn Intermodal	\$3,300,000	FHWA
Waterville Intermodal	\$750,000	FHWA
Presque Isle Intermodal	\$1,000,000	G.O. Bond
SUB-TOTAL	\$5,050,000	
Various IRAP Projects	\$6,203,894	G.O. Bond/FHWA
Various Local Rail Freight Assistance Projects	\$5,000,000	FRA
Various General Fund Bond Projects	\$2,000,000	G.O. Bond
Boston-Portland Amtrak Project	\$58,000,000	TRA/FTA
Rockland Branch Passenger Rail Project	\$33,000,000	TRA/FTA/FHWA
Phase 1 rehab Lewiston Lower (8 miles)	\$530,000	G.O. Bond
FRIP (Danville Junction) Improvements	\$2,800,000	
SUB-TOTAL	\$107,533,894	
GRAND TOTAL	\$145,366,294	

Gen. Fund = General Fund
G. O. Bond = General Obligation
FHWA = Federal Highway Admin.
TRA = Taxpayer Relief Act
FRA = Federal Railroad Admin.
FTA = Federal Transit Admin.

Source: MaineDOT, Maine Freight Strategy 2009 Report

The General Fund is the primary operating fund of Maine State Government. It receives revenue from general state revenue sources not otherwise accounted for in another fund. The largest sources of revenue are from the individual income tax, sales and use tax, tobacco tax and corporate income tax. These four major taxes account for more than 90 percent of General Fund revenue.

The General Obligation Bond is a common type of bond that is secured by the state government to purchase or pay for resources or infrastructure investment. The bond is paid off over time with state revenues. In November 2009, Maine citizens approved a \$71.25 million bond issue to pay for transportation improvements across the state. The funds were used for improvements to highways and bridges, airports, public transit, ferry, and port

facilities. In addition, \$4 million was provided for the acquisition of the Aroostook County lines in 2011.

Federal funds have been received from several sources, including FHWA, FRA and FTA. These federal programs generally require a local match, and Maine has provided this match in order to secure the federal funds. It should be noted that some of the federal funds for the projects presented in Table 7-1 were secured through the Federal Taxpayer Relief Act. This was part of the Amtrak reform in 1998 that provided funds to states without Amtrak service.

7.1.1 MaineDOT Freight Rail Programs

Industrial Rail Access Program (IRAP)

The IRAP program provides up to 50 percent matching funds to private businesses for capital improvement projects related to railroad infrastructure investments including upgrades to siding tracks, switches, turnouts and other rail infrastructure needed to enhance the movement of goods via rail to and from Maine. This program has been used in two dozen locations across the State of Maine since 1997 with \$7.5 million of state funding. Table 7-2 presents the spending history of the IRAP program from 2000 to 2012.

Table 7-2: IRAP Project History 2000-2012

2006 IRAP PROGRAM:			
Location	State Investment	Private Investment	Description
Auburn	\$150,000	\$150,000	Construct Storage and access track, Port of Auburn, LLC.
Rockland	\$ 97,680	\$ 98,000	Rebuild Rockland Freight yard and install Jacking pads for MERR service to Dragon Cement
Millinocket	\$ 68,851	\$ 68,851	Rail spur for propane and fuel oil delivery by rail for Dead River Co.
Stockton Springs	\$156,552	\$156,552	Rail spur Lane Construction to move gravel and stone
Heron	\$257,854	\$257,854	Rail spur to bring inbound cement to Lane cement plant by rail
TOTAL	\$730,937	\$731,257	
2007/2008 IRAP PROGRAM:			
Location	State Investment	Private Investment	Description
Topsham	\$ 38,500	\$ 38,500	Spur improvements, Grimmel industries
Auburn	\$350,000	\$350,000	New spur track and turnouts for SLA RR to increase capacity at Auburn Intermodal and Port of Auburn
Milo	\$ 85,538	\$ 85,538	New sidetrack for Milo Chip LLC. to bring in round wood by rail and outbound chips.
Auburn	\$112,500	\$112,500	Purchase and installation of equipment to unload and ethanol and biofuel from rail cars, Safe Handling
Leeds	\$236,400	\$236,400	Add turnout and 780' of connecting track, extend two side tracks at Turner Egg Farms
Old Town	\$ 53,395	\$ 53,395	Add 620' side track to Warehouse at Old Town Fuel+Fiber
Heron	\$ 83,380	\$ 87,500	Expand rail track and unloading racks at Maine Propane facility
TOTAL	\$959,713	\$963,833	

2006 IRAP PROGRAM:			
Location	State Investment	Private Investment	Description
Auburn	\$150,000	\$150,000	Construct Storage and access track, Port of Auburn, LLC.
Rockland	\$ 97,680	\$ 98,000	Rebuild Rockland Freight yard and install Jacking pads for MERR service to Dragon Cement
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2007/2008 IRAP PROGRAM:			
Location	State Investment	Private Investment	Description
Topsham	\$ 38,500	\$ 38,500	Spur improvements, Grimmel industries
Auburn	\$350,000	\$350,000	New spur track and turnouts for SLA RR to increase capacity at Auburn Intermodal and Port of Auburn
Milo	\$ 85,538	\$ 85,538	New sidetrack for Milo Chip LLC. to bring in round wood by rail and outbound chips.
Auburn	\$112,500	\$112,500	Purchase and installation of equipment to unload and ethanol and biofuel from rail cars, Safe Handling
Leeds	\$236,400	\$236,400	Add turnout and 780' of connecting track, extend two side tracks at Turner Egg Farms
Old Town	\$ 53,395	\$ 53,395	Add 620' side track to Warehouse at Old Town Fuel+Fiber
Heron	\$ 83,380	\$ 87,500	Expand rail track and unloading racks at Maine Propane facility
TOTAL	\$959,713	\$963,833	

2012 IRAP PROGRAM:			
Location	State Investment	Private Investment	Description
Biddeford	\$187,000	\$347,000	Rail siding improvements, CHA bulk propane facility
Madawaska	\$ 35,000	\$ 35,000	Rail yard rehabilitation at Twin Rivers Paper
Auburn	\$ 97,500	\$ 97,500	Rail unloading and Rail/Truck transfer equipment at Savage Services
Mastardis	\$ 41,050	\$ 41,050	Rehabilitation of rail siding for finished product, Twin Rivers Timber, LLC
Skowhegan	\$181,700	\$181,700	Construct 3 new yard tracks and turnouts, Sappi Fine Paper
Millinocket	\$311,599	\$311,600	Rail Spur rehabilitation, transfer/loading equipment for rail cars, for torrefied wood pellets, Thermogen I, LLC.
Baileysville	\$345,460	\$345,460	Yard and track improvements in mill yard and on industrial track leading to the mill, Woodland Rail, LLC.
Seaside	\$100,000	\$100,000	Installation of two switches and 600ft. of new rail siding, two rail car heating stations, GAC Chemical
Heron	\$ 70,000	\$ 70,000	Add unloading capacity and additional gas lines at unloading stations, additional compressor capacity, Maine Propane
Portage	\$ 5,797	\$ 5,797	Rehabilitate rail switch and upgrade rail siding, Seven Island Land
New Limerick	\$ 24,499	\$ 24,500	Rehabilitate rail spur and add side track, Louisiana Pacific
TOTAL	\$1,399,605	\$1,559,607	

	State Investment	Private Investment
TOTAL:		
42 IRAP PROJECTS	\$ 7,590,742	\$10,467,033

As demonstrated by voter support of transportation bond referenda over the years, the citizens of Maine recognize and understand the benefits of investing in the railroad network. Some key factors include: freight rail shipments fuel efficiency for material/goods moved per gallon of fuel, and lower per ton mile shipping costs.¹ With fluctuating fuel prices, the need for a reliable rail system to support a cost effective means for movement of goods is critically important to the state's commerce and economic vitality.

Section 130 Highway/Rail Crossing Improvement Program

The Section 130 program uses federal highway funds for safety improvement projects at highway-rail at-grade crossings. Traditionally these funds have been used for improvements to signals and roadway surfaces.

The State's Biennial Capital Work Plan proposed a \$1.3 million total funding level for this program.

80 percent of the available annual Section 130 funding will target major rail crossing improvements using criteria developed by MaineDOT and local municipal officials. MaineDOT will direct the remaining 20 percent of the annual funding on low cost updates to warning systems in key highway corridors throughout the State. These "low hanging fruit" improvements will include updating cross-bucks with highly-reflective units, updating crossing lights with 12" LED models for better visibility, improving signage and pavement markings.² Table 7 3 lists recent Section 130 rail improvement projects, that is typical, for MaineDOT.

Table 7-3: Fiscal Year 2008 Crossing Projects

Pin	Project Title	RR	Total Project Cost	Federal Amount	Percent Completed
6771.10	Millford, County Road #365392M	GRS	\$125,500	\$113,000	10%
6773.10	Herman, Bog Road #365265L	GRS	\$177,500	\$160,000	50%
6821.10	Monmouth, Pine Hill Road #365119F	GRS	\$138,927	\$125,034	25%
7831.00	Belgrade, Bartlett Road #365134H	GRS	\$305,000	\$275,000	100%
8876.00	Chapman, W. Chapman Road #051097N	MMA	\$123,000	\$110,700	0%
8876.01	Chapman, W. Chapman Road #051097N	MMA	\$130,000	\$130,000	0%
8893.00	Winterport, Route 69, #051234T	MMA	\$79,200	\$79,200	0%
8893.01	Winterport, Route 69, #051234T	MMA	\$164,000	\$164,000	0%
10796.00	Oxford, Fore Street #170914R	SLR	\$88,467	\$88,467	100%
11836.00	Glenburn, Hudson Road #51304F	MMA	\$152,000	\$152,000	90%
TOTAL			1,502,223	\$1,397,40	

1 See Comparative Evaluation of Rail and Truck Fuel Efficiency on Competitive Corridors, US DOT, Federal Railroad Administration, November, 2009

2 Maine Department of Transportation's Report on the Highway Safety Improvement Program Fiscal Year 2008

Freight Rail Interchange Program (FRIP)

The FRIP program provides 50 percent matching funds on capital investment projects for improvements to railroad interchanges/junctions. The goal of such projects is to improve the flow of goods in and out of the state as well as between the rail providers. This program provided \$1.8 million in state matching funds for the Danville Junction project, a safety and operations improvement project with the two operating railroads providing the balance of the funding. This railroad junction of St. Lawrence & Atlantic Railroad and Pan Am Railways is located south of the Auburn intermodal facility in Danville, Maine. The project will reduce freight transit time by as much as 36 hours, enhancing the capability of the railway network to meet customer requirements for more timely service.

Rail Access Initiative Links Program (RAIL)

The RAIL program cascades 100 lb. rail sections from the state's inventory to businesses adjacent to rail lines on a 50 percent matching funds basis. This program enables shippers to upgrade and expand their sidings to enable increased use of rail, and may also be used to induce new rail service for groups of rail customers located within an industrial complex, similar to the freight village concept.

Local Rail Freight Assistance Program (LRFA)

The LRFA program is a revolving no-interest loan program for property owners who wish to improve access to rail facilities. This program was originally funded with federal funds from the 1990's, and is an ongoing revolving loan program – as loans are paid off the fund is replenished to enable future loans for eligible projects. Typically the program has been used to enable the private match to be made over time.

Rail Corridor Preservation Program (RCPP)

The RCPP program enables the State of Maine to purchase or lease rail property to protect and improve rail corridors threatened with abandonment. Preserving the rail corridors that serve as a vital link for Maine businesses is critical to the state's economy. This program was established by state statute, and is funded periodically from appropriations and bond funds.

7.1.2 Passenger Rail (Downeaster Service)

Capital funds for the development of the Downeaster service were primarily sourced from federal programs, but with considerable support and participation of Maine's state government. The Legislature established the Northern New England Passenger Rail Authority in 1995 as a public transportation authority charged with re-establishing and operating passenger rail service between Maine and Boston, Massachusetts. MaineDOT has partnered with NNEPRA in the development of plans and projects, and the host railroad and Amtrak have also provided support through the provision of in-kind services, materials and equipment.

The operating expenses for the Downeaster are funded from two primary sources. Fare revenues support approximately 53 percent of the operating expenses, and the remaining 47 percent is funded through federal and state subsidies. The Federal Congestion Mitigation and Air Quality (CMAQ) program funds 80 percent of this subsidy, with the remaining subsidy being drawn from Maine's Multimodal Account. Maine is the only state contributing to the Downeaster's operating subsidy even though the service passes through and makes station stops in the States of New Hampshire and Massachusetts. Massachusetts, through the Massachusetts Bay Transportation Authority, provides trackage rights and terminal space at North Station under very reasonable terms. Several communities in New Hampshire participate in station management and maintenance.

To address the need for continuing state support of operations in August of 2009, MaineDOT and NNEPRA executed a cooperative agreement regarding funding for passenger rail activities. The original term of the agreement extended to June 30, 2010, but was to be automatically extended thereafter for consecutive periods of twelve (12) months for each period (the “Annual Terms”) until such time as the car rental tax funds are no longer required to meet any of the First Priority Needs. Specifically, the MaineDOT agrees to make available to NNEPRA a portion of the car rental funds deposited in the Multimodal account under Public Law 2007, Chapter 677 to pay capital and operating costs of the Downeaster service as set forth in the budget as approved by MaineDOT or as otherwise approved by MaineDOT on an as-needed basis.

7.1.3 Private Funding for Freight Rail

Privately owned freight rail service providers fund their rail improvements with cash flow (revenue from operations) or bond and stock issuances. These investment decisions are based on expectations of future demand, potential to generate continued revenue flow, and the costs of the improvements. This return on investment analysis is essential to this process. The private ownership of freight railroads and the fact that there have been limited public funds available for investment in privately-owned infrastructure, has constrained public funding of freight rail projects. As a result, alternative means of funding projects deemed to be in the public interest, and not necessarily meeting the return on investment requirements of the railroad companies, has led to the development of alternative funding strategies, such as public-private partnerships (P3’s) and shared use corridor capacity projects. These arrangements may enable freight railroads to make enhancements and improvements that might not otherwise be financially feasible.

7.1.4 Public-Private Partnerships with Freight Railroads

Many public-private partnerships have been implemented successfully for freight rail projects throughout the United States. The projects described here are representative of some of the nationally-significant P-3 projects (Public Private Partnerships).

Alameda Corridor

This partnership is an early and successful example of a public-private partnership. This \$2 billion, 20-mile rail link connects the Ports of Los Angeles and Long Beach to rail yards near downtown Los Angeles. Completed in April 2002, the corridor has made the port “more productive, reduced noise and congestion in the community, made the streets safer, cut down on pollution (from both motor vehicles and locomotives), and allowed faster, more efficient freight movements.”³

³ http://www.aar.org/InCongress/InfrastructureTaxIncentive/~/_media/AAR/PositionPapers/Public%20Private%20Partnerships%20June%202009.ashx

Chicago Region Environmental and Transportation Efficiency Program (CREATE)

The State of Illinois, the City of Chicago, and major freight and passenger railroads have partnered to design and execute this program. CREATE will grade separate railroad tracks and highways to reduce congestion and delays for both rail and highway traffic. The project will improve track connections and rail routes to provide for more efficient operations for both passenger and freight rail. Passenger-only tracks will be added in key locations to remove bottlenecks that have historically slowed transit in the region.⁴

Heartland Corridor

This multi-state partnership with the private railroad is designed to increase the flow of consumer goods by rail on the Heartland Corridor between the East Coast and Chicago. The project will raise the height of nearly 30 rail tunnels, allowing efficient doublestack container services to attract freight off the highways and onto the rail system.⁵ The \$150 million plan is projected to improve the efficiency of freight operations on Norfolk Southern rail lines between the Port of Norfolk, Virginia and Chicago, Illinois. Construction on the project began in 2007 and was completed in 2010.

7.2 Federal Funds

In comparison to other modes, federal funding for railroad transportation is often considered to be scarce and inconsistent. However, there are a number of federal programs that can be used for rail projects and programs. Federal programs for local transit and commuter passenger rail services have been well established through the Federal Transit Administration. Intercity passenger rail is operated by Amtrak, and federal funding has long been an ongoing challenge for this national service. Current federal policies are more supportive of investment in the Amtrak system.

Federal funding for freight rail projects is limited, yet there are programs within the Federal Railroad Administration and Federal Highway Administration that may be applicable to certain types of railroad infrastructure projects. Some of these programs offer low-interest loans and others award grants based on various criteria. While the State of Maine has taken advantage of some of these programs there are other opportunities that may be applicable to Maine's railroad agenda.

7.2.1 U.S. Department of Transportation Federal Railroad Administration Programs

Railroad Rehabilitation and Improvement Financing (RRIF)

The Railroad Rehabilitation and Improvement Financing (RRIF) program provides direct Federal loan guarantees to finance development of railroad infrastructure. FRA can authorize direct loans and loan guarantees up to \$35 billion and up to \$7 billion for projects benefiting non-Class I carrier freight railroads. As illustrated in Table 7-4 twenty-two loan agreements have been granted since 2002, totaling more than \$778 million.

Funding is available for:

- Acquiring, improving, or rehabilitating intermodal or rail equipment or facilities, including track, components of track, bridges, yards, buildings and shops;
- Refinancing outstanding debt incurred for the purposes listed above; and Developing or establish new intermodal or railroad facilities.

⁴ <http://www.aar.org/InCongress/InfrastructureTaxIncentive/~media/AAR/PositionPapers/Public%20Private%20Partnerships%20June%202009.ashx>
⁵ <http://www.aar.org/InCongress/InfrastructureTaxIncentive/~media/AAR/PositionPapers/Public%20Private%20Partnerships%20June%202009.ashx>

Eligible borrowers are railroads, state and local governments, government sponsored authorities and corporations, joint ventures including at least one railroad, and freight shippers with limited modal options who seek to construct and establish a new rail connection. The program provides applicants with the opportunity to acquire loans at very competitive rates, with repayment terms of up to 35 years. In addition, no state or local matching funds are required.

Priority consideration is given to projects that: enhance public safety and the environment; promote economic development and international competition; and preserve or enhance rail or intermodal service to small rural communities.⁶ In addition, the program emphasizes investment in smaller railroads with the requirement that a significant portion of the loans be granted to non-Class I railroads. Given these program objectives rail rehabilitation projects in the State of Maine may be well suited to this loan program.

Eligible projects include:

- Improving existing track to permit higher maximum operating speeds;
- Purchase of passenger rolling stock;
- Adding or lengthening passing tracks to increase capacity;
- Interlocking improvements to increase capacity and reliability; and
- Signaling system improvements designed to increase capacity and maximum speeds, and improve safety.⁷

Table 7-4: Disbursement of RRIF Funds 2002-2008

Organization	Year	Amount (\$Millions)
Iowa Interstate Railroad	2008	\$31.00
Nashville and Eastern Railroad	2008	\$4.60
Columbia Basin Railroad	2008	\$3.00
Great Western Railway	2007	\$4.00
Virginia Railway Express	2007	\$72.50
R.J. Corman Railway	2007	\$59.00
Dakota, Minnesota & Eastern Railroad	2007	\$48.00
Iowa Northern Railroad	2006	\$25.50
Wheeling & Lake Erie Railway	2006	\$14.00
Iowa Interstate Railroad	2006	\$9.35
Great Smoky Mountains Railroad	2005	\$7.50
Riverport Railroad	2005	\$5.50
The Montreal, Maine & Atlantic Railway	2005	\$34.00
Tex-Mex Railroad	2005	\$50.00
Iowa Interstate Railroad	2005	\$32.70
Stillwater Central Railroad	2004	\$4.60
Wheeling & Lake Erie Railway	2004	\$25.60
Arkansas & Missouri Railroad	2003	\$11.60
Nashville and Western Railroad	2003	\$2.30
Dakota, Minnesota & Eastern Railroad	2003	\$233.60
Amtrak	2002	\$160.60
Mount Hood Railroad	2002	\$2.07

Source: FRA website, <http://www.fra.dot.gov/us/content/177>

6 Electronic Code of Federal Regulations, <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr;rgn=div5;view=text;node=49%3A4.1.1.1.39;idno=49;c=ecfr#49:4.1.1.1.39.1.126.3>

7 <http://www.fra.dot.gov/us/content/1990>

Rail Line Relocation and Improvement Capital Grant Program

This program provides grants for local rail line relocation and improvement projects. Specifically, its intent is to improve the route and structure of a rail line or its relocation. The U.S. Congress authorized Section 9002 of SAFETEA-LU to provide \$350 million per year for each fiscal year through FY2009. The program is now available subject to appropriations.

States are eligible for these grants for projects that will improve the route or structure of a rail line and:

- Involves a lateral or vertical relocation of any portion of the rail line; or
- Will mitigate the adverse effects of rail traffic on safety, motor vehicle traffic flow, community quality of life, or economic development.

The program has both competitive and non-competitive (i.e., earmarked) funds available. No funding for this program was appropriated by Congress until FY 2008, but Congress appropriated \$25 million, with \$17.1 million directed to twenty-three non-competitive projects, in FY2009.⁸ Again, the lack of a long term transportation law subjects this program to discretionary funding and appropriations.

Passenger Rail Investment and Improvement Act of 2008 (PRIIA)

PRIIA reauthorized the National Railroad Passenger Corporation (Amtrak) and tasked Amtrak, the US DOT, FRA, States, and other stakeholders with improving passenger rail service, operations, and facilities. The focus of PRIIA is on intercity passenger rail, including Amtrak's long-distance routes and the Northeast Corridor (NEC), state-sponsored corridors throughout the US, and the development of high-speed rail corridors.⁹

The Act required that states designate a state rail transportation authority to develop rail plans and policies for rail freight and passenger systems in each state, and establish priorities and strategies to enhance rail services in the public interest. Section 303 outlines the content and purpose of state rail plans that will serve as the basis for future federal and state investments in the railroad system in the state. Further, state rail plans are to be coordinated with other state transportation planning programs in order to place the rail mode on an equal footing with planning and programming for other transportation modes.

Other key provisions of the Act include:

SEC. 301 - INTERCITY PASSENGER RAIL SERVICE CORRIDOR CAPITAL ASSISTANCE PROGRAM

PRIIA established a new intercity passenger rail service corridor capital assistance program. U.S. DOT is authorized to use appropriated funds to make grants for capital investments benefiting intercity rail passenger service. Eligible applicants include states (including the District of Columbia), groups of states, interstate compacts, and public agencies with responsibility for providing intercity passenger rail service established by one or more states.

Grants may be used to assist in financing the capital costs of facilities, infrastructure, and equipment necessary to provide or improve intercity passenger rail operations. This program is modeled on the capital assistance to states for intercity passenger rail service programs FRA implemented in fiscal year 2008.

SECTION 501 - HIGH-SPEED RAIL CORRIDOR DEVELOPMENT

In an effort to address the nation's overall transportation challenges, the President and his Administration have proposed a new and efficient high-speed passenger rail network in the 100-600 mile corridors that connect

⁸ <http://www.fra.dot.gov/us/content/2008>

⁹ <http://www.fra.dot.gov/downloads/PRIIA%20Overview%20031009.pdf>

communities across America. The Vision for High Speed Rail in America outlines the President's vision to rebuild existing rail infrastructure while developing a comprehensive high-speed intercity passenger rail network through a long-term commitment at both the federal and state levels.

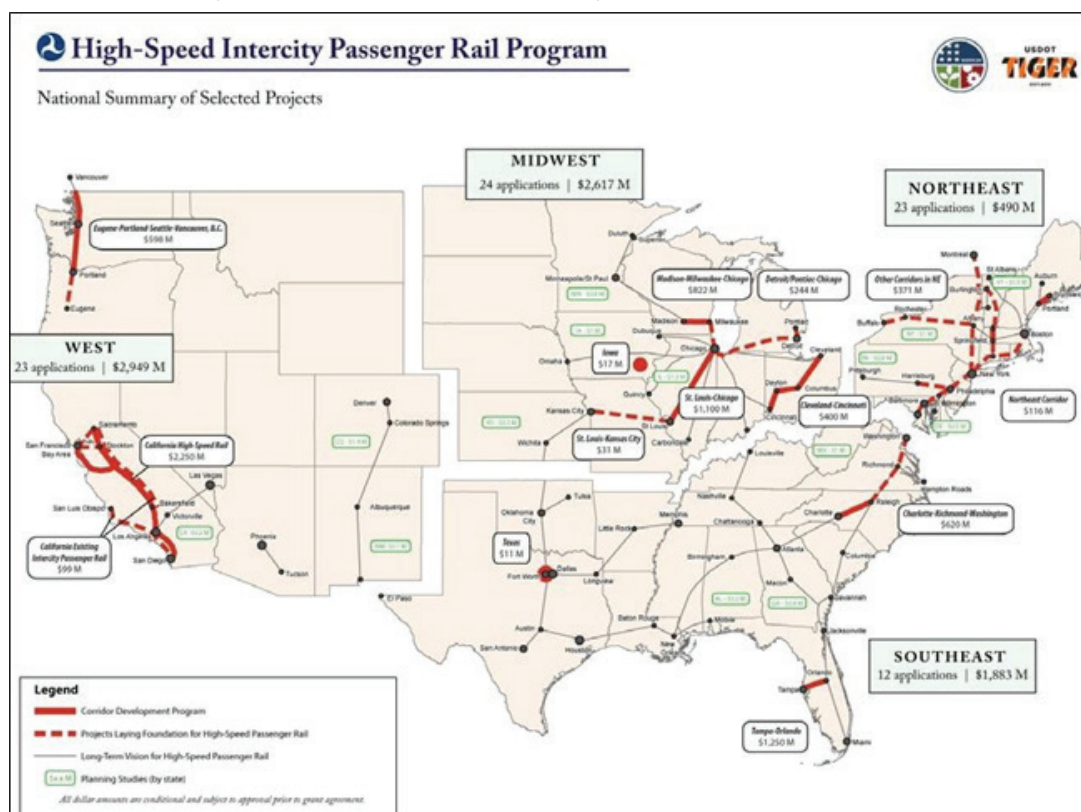
The legislation reauthorizes Amtrak and provides a total of \$13.06 billion over 5 years, of which \$5.3 billion will be for capital improvements, to help bring the Northeast Corridor to a state of good repair and encourage the development of new and improved intercity passenger rail service. The law provides \$1.5 billion for the planning and development of high-speed rail corridors including the: Northeast Corridor and Northern New England Corridor.

PRIIA authorized funds to establish and implement a high-speed rail corridor development program [§501]. Eligible applicants include a state (including the District of Columbia), a group of states, an interstate compact, and a public agency established by one or more states with responsibility for high-speed rail service or Amtrak. Eligible corridors include the ten high-speed rail corridors previously designated by the Secretary of Transportation. Grants may be used for capital projects, which are broadly defined to include typical activities in support of acquiring, constructing, or improving rail structures and equipment.

High-speed rail is defined as intercity passenger rail service that is reasonably expected to achieve operating speeds of at least 110 miles per hour. US DOT has specified grant application requirements, and PRIIA identified selection evaluation criteria, including that the project be part of a state rail plan, that the applicant have the demonstrated capacity to carry out the project, and that the project result in significant improvements to intercity rail passenger service. The Northern New England High-Speed Rail Corridor is eligible for this program.

Figure 7-1 illustrates projects funded in the first round of this program.

Figure 7-1: First Round of US High Speed Rail Grants, 2010



SECTION 302 – CONGESTION RELIEF

The Act appropriated funds to U.S. DOT to make grants to eligible states or to Amtrak in cooperation with states for financing the capital costs of facilities, infrastructure, and equipment for high-priority rail-corridor projects determined necessary to reduce congestion or to facilitate growth in intercity passenger rail utilization.

Eligible projects are those identified by Amtrak to reduce congestion or facilitate ridership growth in heavily traveled rail corridors, those identified by the Surface Transportation Board to improve on time performance and reliability, and those designated by US DOT as meeting the purpose of the program and being sufficiently advanced so as to be ready for implementation. US DOT has established grant eligibility, qualification and administration conditions. It is unlikely this program would be applicable to Maine.

Rail Safety Improvement Act of 2008 (RSIA)

The Rail Safety Improvement Act of 2008, a major element of PRIIA, requires Class I railroads, intercity, and commuter railroads to develop effective safety programs. The Act provides for Railroad Safety Infrastructure Improvement grants for eligible railroads, states and local governments. The legislation provides \$1.6 billion for rail safety for FY 2009 through FY 2013. The bill also authorizes \$250 million in Rail Road Safety Technology Grants.

All grants require a 20 percent local match, and priority will be given to projects that seek less than the full 80 percent federal share. For projects to be eligible they must be identified in the state rail plan, and 5 percent of the funds are reserved for projects of less than \$2 million.

7.2.2 Other U.S. DOT Funding Programs Available for Rail Projects***SAFETEA-LU***

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) is the current federal surface transportation authorization act, which continues many of the policies and programs that originated in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), and the Transportation Equity Act for the 21st Century (TEA-21). SAFETEA-LU authorized the federal surface transportation programs for highways, highway safety and transit through September 30, 2009. The Act continues in effect through a series of Continuing Resolutions.

SAFETEA-LU continues to include the flexibility that has characterized the preceding authorization acts. This flexibility enables the states and MPO's to utilize a variety of programs for rail projects. Table 7-5 summarizes some of the SAFETEA-LU funding programs that may be used for rail projects.

Table 7-5: SAFETEA-LU Funding Sources for Rail

Program	Funding Source	Use
Transportation Infrastructure Finance and Innovation Act (TIFIA)	US DOT - Appropriations	Federal Credit Assistance - Loans and Loan Guarantees
Railroad Rehabilitation and Improvement Financing (RRIF) Program	US DOT - Appropriations	Federal Credit Assistance - Loans and Loan Guarantees
Highway-Rail Crossing Program - Highway Trust Fund (Section 130 program)	Formula distribution to states	
Rail Line Relocation and Improvement Capital Grant Program	Federal Railroad Administration (FRA) Appropriations	Grant Program
New Starts (FTA)	US DOT - Appropriations	Grant Program (50% match)
Local Freight Assistance (LFRA)	(Not currently funded)	Grant and Loan Program
Projects of National and Regional Significance (PNRS) Program	Title 23 US Code Highway Trust Fund	Grant Program
Freight Intermodal Distribution Pilot Grant Program	Federal Highway Administration	Grant Program
Community Facilities Program	Federal Railroad Administration	Loan, Loan Guarantees, and Grant Program
National Highway System	Federal Highway Administration	May fund rail projects related to highway construction Grants (90/10)
Surface Transportation Program	Federal Highway Administration - Formula distribution to states	May fund highway projects to accommodate railroad operations

Transportation, Community, and System Preservation Program Grant (TCSP)

The TCSP Program was designed to connect transportation, community, and system preservation planning. Grants are provided to states and local entities and potential private partners to fund projects that will integrate transportation, community, and system preservation plans and practices that address one or more of the following:

- Improve the efficiency of the US transportation system;
- Reduce the environmental impacts of transportation;
- Reduce the need for costly future investments in public infrastructure;
- Provide efficient access to jobs, services, and centers of trade; and
- Examine community development patterns and identify strategies to encourage private sector development that accomplishes the above.¹⁰

Section 1117 of SAFETEA-LU authorized the TCSP Program through FY 2009, and continues through the Continuing Resolution process. The TCSP Program is a FHWA Program being jointly managed with FTA, FRA, the Office of the Secretary, and the Research and Innovative Technology Administration within the US DOT, and the US EPA.

¹⁰ <http://www.fhwa.dot.gov/tcsp/sec1117.htm>

Federal Transit Administration New Starts/Small Starts

The Federal Transit Administration New Starts program funds target both passenger rail and transit projects. Cost effectiveness, local financial commitment and transit supported land use are three of the criteria used in determining which projects will receive funding in this highly competitive program. FTA is updating criteria to reflect more emphasis on community development goals and land use impacts of transit investments.

FTA's New Starts program is funded through the Highway Trust Fund and is highly competitive. The program is focused on transit investments for light-rail, bus rapid transit and heavy rail (subway) projects. New Starts and Small Starts have also been used for commuter rail projects, though not as frequently as other transit projects. This program has demands far exceeding its budget and entails a complex and detailed application process. The program has been augmented with new program criteria for Small Starts and Very Small Starts to encourage a broader diversity of projects, though these criteria may benefit bus projects as opposed to rail.

The New Starts program provides federal funds on a matching basis (80/20 by law, 50/50 in practice) to support transit "guideway" capital investments, including commuter rail. FTA evaluates projects based upon established criteria that include cost-effectiveness, local financial commitment and transit supported land use. It is worth noting that FTA is revising the New Starts program evaluation criteria and is considering placing increased emphasis on community and regional economic development and a broader range of benefits beyond cost effectiveness.

Congestion Mitigation and Air Quality Improvement (CMAQ)

The Congestion Mitigation and Air Quality (CMAQ) Improvement program funds projects aimed at reducing highway traffic congestion and achieving or maintaining federal Clean Air Act requirements. CMAQ funds have been utilized for freight and passenger rail projects. Funding is available for projects in areas that do not meet the National Ambient Air Quality Standards (e.g. non-attainment areas), in former non-attainment areas now in compliance (e.g. maintenance areas), and for projects outside air quality non-attainment areas where the air quality benefits of the project accrue to the non-attainment area or maintenance area.

CMAQ funds have been used to fund operations of passenger rail services – both commuter and intercity. For example, CMAQ funds have been used to fund operations of the Downeaster rail service.

Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA)

The Transportation Infrastructure Finance and Innovation Act established the TIFIA program in 1998 enables the U.S. Department of Transportation to offer credit assistance to projects of regional and national significance. The program was designed to leverage federal funds with local or private investment by offering attractive terms and the flexibility to more efficiently finance projects with unpredictable revenue streams (such as tolls). TIFIA credit assistance can be in the form of a direct loan (most common), a loan guarantee or a standby line of credit.

TIFIA is not a grant program but rather a loan program that must be paid back with an identifiable revenue source. TIFIA loans are awarded through a competitive application process for eligible projects and can be used in traditional public financings as well as P3s. Highway, transit, passenger rail, certain freight facilities and certain port projects may receive credit assistance through TIFIA.

TIFIA loan funds have been used for the following types of rail projects:

- Rail projects involving the design and construction of intercity passenger rail facilities or the procurement of intercity passenger rail vehicles;
- Public or private freight rail facilities providing benefits to highway users;

- Intermodal freight transfer facilities;
- Access to freight facilities and service improvements, including capital investments for Intelligent Transportation Systems; and
- Port terminals, only when related to surface transportation infrastructure modifications to facilitate intermodal interchange, transfer, and access into and out of the port.

7.2.3 Other Potential Federal Funding Sources

Economic Development Administration Programs

The Economic Development Administration (EDA) of the Department of Commerce administers two project grants programs that may have applicability to rail projects, freight projects in particular. Grants for Public Works and Economic Development Facilities and Economic Adjustment Assistance are targeted toward promotion of long-term economic development in areas experiencing substantial economic distress, and to assist states and local interests with strategies to bring about a change in the economy, focusing on areas subjected to serious economic disruption. Examples of rail projects funded through the EDA include improvements to expand the rail capacity; construction of a rail switching yard and rail car storage area; and rail corridor improvements.

U.S. Department of Agriculture

USDA's Rural Development programs include loans and grants and loan guarantees for essential community facilities projects. With a focus on water and environmental projects such as water systems, waste systems, solid waste, and storm drainage facilities, USDA and the FRA have identified rail freight lines as critical community facilities in certain circumstances.

Appropriation Act Earmarks

Earmarked projects for rail and other modes are often included in the annual appropriation language for U.S. DOT. Rail related earmarks have included projects for rail line rehabilitation, relocation, intermodal and transfer facilities, and capacity and safety-related improvements. There has been a marked reduction in the earmark process, however, in the current Congress.

Railroad Track Maintenance Credit

The railroad track maintenance credit is a tax credit for regional and short line railroads enacted on January 1, 2005, effective for three years, and later extended through calendar year 2015. This tax credit program encourages continued private investment in low density lines that serve many areas of the United States that could lose continued rail freight service. This program is oriented to freight operations, but it may provide for improvements on shared use corridors which may also benefit passenger rail.

The credit is for fifty percent of the qualified railroad track maintenance expenditures paid or incurred by an eligible taxpayer during the taxable year with a limit equivalent to \$3,500 per mile. Expenditures that qualify for the credit include gross expenditures for maintaining railroad track, which includes roadbed, bridges, and related track structures, that are owned or leased as of January 1, 2005, by a Class II or Class III railroad. Legislation has been approved to extend the tax credit through January 1, 2015, as it has been a helpful resource for short line railroads and their customers and communities.

7.3 *Freight and Rail Funding Programs in Other States*

Maine has been actively engaged in rail projects for many years, and its Industrial Rail Access Program model has been adopted by other states. A review of other state's programs is provided to suggest possible approaches Maine may consider to adequately meet the needs identified in this state rail plan that promote the public good, while recognizing the need for responsible use of the state's financial resources.

There are a number of state programs that provide funding options for public and private rail initiatives. Some states offer an IRAP similar to Maine while other states have developed other funding mechanisms for rail projects. Most of the loan and grant programs in other states require a public benefit from the project to justify the use of public funds for rail investment. The major functions of these programs are to preserve existing infrastructure, assist capital improvement projects, and enhance economic development.

Preservation and Improvement

Preservation efforts for rail infrastructure may be undertaken by either public or private entities, and these programs generally include improvements and maintenance of existing lines, land acquisition, right-of-way, and rehabilitation of facilities. Most states evaluate potential projects based upon public benefits to safety and the economy, job creation and/or retention, improved service to industrial and agricultural customers, elimination of grade crossings and reductions in highway congestion. Highlights of programs from other states that provide grant or loan assistance for preservation and improvements to the existing rail infrastructure are illustrated in Table 7-6.

One such program is the Minnesota Rail Service Improvement Program, which consists of five components that draw funds from the state general fund and general obligation bonds. The first component is the Rail Line Rehabilitation Program which provides low or no-interest loans for up to 70 percent of costs to railroads for the preservation and rehabilitation of rail lines. The Rail Purchase Assistance Program is the second component, providing funds for the purchase of regional rail lines. Criteria to receive funding includes demonstrating that the rail can have profitable operations, benefits exceeding costs of purchase and rehabilitation, and having capable operators. The third program component is the Rail User and Rail Carrier Loan guarantee Program which guarantees up to 90 percent of loans to shippers and carriers for rail rehabilitation and capital improvements. Capital Improvement Loans of up to the lesser of \$200,000 or 100 percent of costs for facility improvements, track connections and loading, unloading and transfer facilities comprise the fourth component. The final component is the Rail Bank Program, used to acquire and preserve rail lines for future transportation needs.¹¹

¹¹ "Financing Freight Improvements", FHWA 2007

Table 7-6: Sampling of State Rail Preservation and Improvement Programs

State	Program Name	Program Details
Illinois	Rail Freight Program ¹²	Provides assistance to communities, railroads, and shippers. Funding comes in the form of low-interest loans and grants. Funds provided by the IL General Fund and loan repayments.
Michigan	Rail Loan Assistance Program ¹³	Provides no-interest loans up to \$1 million to railroads, localities, EDC's, and freight rail users. Recipients must match 10% of project cost and demonstrate public benefits.
Mississippi	Local Government Revolving Loan Program ¹⁴	Low interest loans up to 15 years at 1% less than Federal Reserve Discount Rate. Loans are from Mississippi Development Authority to counties or municipalities.
Ohio	Ohio Rail Development Commission ¹⁵	Assists companies considering new rail infrastructure. Grants provided on basis of job creation/retention. Loans are 5 years with interest of 2/3 prime rate.
Virginia	Rail Preservation Grant Program ¹⁶	Provides grants or loans for shortline operations. Funds require 30% match. Local gov't, authorities, agencies, and non-public sector are eligible. Loans only available to large railroads.
Wisconsin	Freight Railroad Preservation Program ¹⁷	Grants for preservation and rehabilitation of publicly owned lines, purchase of abandoned lines. Grants account for 80%, and available to public agencies and private sector.

Infrastructure Banks

In addition to preservation programs, some states have created infrastructure banks that provide low interest loans to private entities and governments for land acquisition, multimodal facilities and other infrastructure improvements. The advantage of the infrastructure bank is the ability for the state to issue low interest loans from a revolving “bank” fund, where new loans can be issued from the repayment of previous loans.

The Washington Rail Bank funds capital rail projects that improve freight movement by providing interest-free loans of up to \$250,000. A minimum of a 20 percent match of funds from other sources is required for these interest-free loans. Typical projects are strategic multimodal centers; purchases of rolling stock; improvements to terminals, yards, wharves, or docks; communication operating system improvements; siding track, rail grading, tunnel bore improvements; and bridges, trestles, culverts and other elevated or submerged structures.¹⁸

The Commonwealth of Pennsylvania and the State of Vermont also have infrastructure banks that offer loans to all transportation modes. Pennsylvania's Infrastructure Bank grants loans at one-half the prime lending rate for up to 10 years for all types of transportation infrastructure projects. Borrowers can be municipalities, counties, transportation authorities, economic development agencies, non-profit organizations, and private corporations.¹⁹ Vermont's State Infrastructure Bank offers loans at a 4 percent fixed rate for private companies (10-15 year amortization schedules), and a 2.5 percent fixed rate for municipalities is also available. Loans can be supplemented by state dollars and made available to shippers and carriers for rail line improvements.

¹² “Financing Freight Improvements”, FHWA 2007

¹³ “Financing Freight Improvements”, FHWA 2007

¹⁴ “Mississippi Freight Rail Service Projects Revolving Loan/Grant Program (RAIL) Guidelines” Mississippi Development Authority

¹⁵ “Financing Freight Improvements”, FHWA 2007; <http://www.dot.state.oh.us/divisions/rail/Pages/default.aspx>

¹⁶ Virginia Department of Rail and Public Transportation (DRPT): <http://www.drpt.virginia.gov/activities/railfunding.aspx>

¹⁷ “Freight Railroad Preservation Program Application Instructions”, Wisconsin Department of Transportation, <http://www.dot.wisconsin.gov/localgov/aid/frpp.htm>

¹⁸ “Freight Rail Investment Bank Program Application Packet” WSDOT

¹⁹ Pennsylvania Infrastructure Bank” <http://www.dot.state.pa.us/pennndot/bureaus/pib.nsf/homepagepib?readform>

Rail Enhancement Grant Programs

These programs involve both the public and private sector and provide partial funding to support improvements to a state's rail infrastructure.

Vermont has a long history of stakeholder partnerships to invest in improved rail infrastructure and to build rail sidings for existing and new shippers through a three-way (state, railroad, and shipper) match program. Vermont has typically budgeted \$200,000 per year for this program, which leverages \$600,000 worth of projects per year.²⁰

The Commonwealth of Virginia provided \$27 million in FY 2009 for the Rail Enhancement Fund (REF), which is a grant program supporting improvements for passenger and freight rail transportation.²¹ The application process is competitive.

Virginia's REF is similar to Maine's Critical Rail Corridors program, but it is more flexible. Funding is granted for both freight and passenger rail projects and can be for corridors or intermodal improvements. Funding requests for infrastructure support are approved by the nine-member Commonwealth Transportation Board, and a minimum matching contribution of 30 percent is required.²²

Commonwealth of Pennsylvania Freight Rail Initiatives

The Rail Freight Assistance Program (RFAP) is an annual grant program that provides financial assistance for investment in rail freight infrastructure. The program is designed to preserve essential rail freight service where economically feasible and to preserve or stimulate economic development through new or expanded rail freight service.²³ The maximum state funding is 70 percent of total project costs, not to exceed \$700,000. In addition, funding for the construction portion of any project cannot exceed \$250,000.

The Pennsylvania Department of Transportation recently awarded a total of \$24.5 million in grants to 39 railroads and rail shippers through the Rail Freight Capital Budget and Transportation Assistance program and RFAP. Proceeds will be used to rehabilitate or construct freight-rail infrastructure, with the state providing \$15 million from the capital budget program and \$9.5 million from the freight-rail assistance program. Many of the grant recipients will use the funds to rehabilitate existing track, bridges, and other infrastructure.

Pennsylvania has a Rail Freight Advisory Committee that consists of twenty four members, including:

- The Secretary of Transportation (ex officio);
- Secretary of Community & Economic Development (ex officio);
- Chairman of the Public Utility Commission (ex officio);
- Chairman and Minority Chairman of the Senate Transportation Committee;
- Chairman and Minority Chairman of the House Transportation Committee; and
- Seventeen members of the public appointed by the Governor for a term of three years.

The bylaws of the committee require that the following areas be represented on the Rail Freight Advisory Committee:

- Two representatives of Class 1 railroad companies;
- Three representatives of regional/short line operation;
- Six representatives of rail shippers each representing the following: Coal; Steel; Lumber; Intermodal; Chemical; Food Products/Agriculture;

20 State Rail & Policy Plan, 2006, State of Vermont, Prepared for: Vermont Agency of Transportation December 2006.

21 http://www.ctb.virginia.gov/resources/Agenda_Item_3_DRPT_Budget_-_FY_2009.pdf

22 Progressive Railroading <http://www.progressiverailroading.com/freightnews/article.asp?id=8334>

23 <http://www.dot34.state.pa.us/BRFInfo.aspx#24>

- One representative from the Pennsylvania Chamber of Commerce;
- Two representatives of regional/local economic development groups;
- Two representatives of regional/local planning commissions; and
- One representative of rail contractors/suppliers.

A Chairperson, Vice Chairperson and Secretary are elected annually by the members and are from the public members. The committee meets at least four times every 12 months but may hold additional meetings.

The committee advises on the comprehensive rail freight study for the state and on all phases of the rail freight transportation program activities being undertaken or financially assisted by the Department of Transportation. In addition, it proposes methods, strategies or technologies for improving rail freight transportation services systems or facilities within Pennsylvania.²⁴

For marketing purposes, the Commonwealth of Pennsylvania has developed a Rail Freight Properties Directory. The purpose of the directory is to identify properties located along the states regional and shortline railroads that could possibly be served by rail. More than 200 properties are included in the directory as potentially able to be served by rail. Each property is described in the directory and maps are also provided. In addition to a general description, transportation connections, buildings, sale/lease/availability, and contacts for follow-up are provided.²⁵

Wisconsin Freight Railroad Infrastructure Improvement Program (FRIIP)

This state funded program provides loans for improvements to the rail system, including those on privately owned lines or at loading and trans-loading facilities. Up to 100 percent financing is available for projects that will:

- Connect an industry to the national railroad system;
- Improve or enhance efficiency, safety, and intermodal freight movement;
- Rehabilitate rail lines; and
- Develop the economy.

Since 1992, \$79 million in FRIIP loans have been made available.²⁶

7.4 Rail Program Financing Approaches

The maintenance and operation of Maine's transportation system faces serious fiscal constraints. According to the 2009 TRIP report, "Maine faces a \$3.3 billion gap over the next ten years in needed funding to allow the state to significantly improve road and bridge conditions, relieve congestion and enhance traffic safety and economic development."²⁷ As a result, all modes must compete with one another to secure a share of the limited financing available, and the state must be judicious in its selection of highest priority projects.

This funding gap applies to Maine's identified rail infrastructure needs. Some portion of this gap may be filled with federal and state allocations toward rail projects, as well as contributions from the railroads themselves.

²⁴ <http://www.dot.state.pa.us/Internet/pdCommissCommitt.nsf/infoRFACDuties?OpenForm>

²⁵ Pennsylvania Rail Freight Properties Directory, <http://www.dot.state.pa.us/Internet/Bureaus/pdBRF.nsf/infoRFPWProperties?OpenForm>

²⁶ <http://www.dot.wisconsin.gov/localgov/aid/friip.htm>

²⁷ Falling Behind: The Condition and Funding of Maine's Roads, Highways & Bridges, Prepared by: TRIP, October

These efforts are likely to be made on a case-by-case basis, however, making long-range capital planning for rail investments is challenging. Neither the public nor the private sector is equipped to pursue these investments independently, suggesting the need for innovative financing and public-private partnerships to implement the state's rail investment agenda.

The shape of possible financing solutions is subject to the determination of Maine's state government and the interests of the citizens. There have been a wide range of good ideas on how the state may invest in the railroad system, but these ideas need to be weighed against the fiscal realities facing the state, the nation and the taxpayers of Maine. Fiscal prudence will require that investments in railroad infrastructure be evaluated from the perspective of return on that investment – not necessarily in the same way a private business would measure ROI, but rather how projects and programs will achieve public benefits including enhanced safety, improved system efficiency, and increased mobility options for the movement of both people and goods. Other public benefits include environmental sustainability, reduced wear of the public roadway network, and reduced demand for fossil fuels.

This section describes possible funding sources for passenger and freight rail investment in Maine.

7.4.1 Passenger Rail

The existing Downeaster service has exceeded initial ridership forecasts and there is considerable public support for maintaining and expanding this service. Keeping the existing Downeaster infrastructure in a state of good repair, as well as continuing to secure operational funding for this service, are high priorities for the state. The expansion of passenger rail service into other parts of the state is also desired by some constituencies. The extension of the Downeaster to Brunswick is the first step toward expanding passenger rail service north of Portland, and NNEPRA is completing a Corridor Service Development Plan that will define both near term and long term requirements for growing and maintaining intercity passenger rail in the state and region. Completion of this document is required to be eligible for future federal funding opportunities.

The development of commuter rail services has been examined in the greater Portland region, and public comments at rail plan public meetings advocated for commuter rail services for the Lewiston/Auburn and Bangor regions as well as Portland. As noted in earlier sections of this state rail plan the population density, travel to work patterns and available rights-of-way may not support the significant capital investment required for start-up commuter rail in the short term. However, steps should be taken to protect and preserve corridors for future transportation needs throughout the state while concurrently developing land use regulatory schemes that encourage transit oriented development and limit continued sprawl type development.

Table 7-7: Identified Needs for Passenger Rail Funding

Project or Program	Planning Horizon Costs	Planning & Design	Capital Investment	Potential Federal/State Funding	Anticipated Shortfall
Downeaster operating costs	Annual outgoing	NA	NA	Multimodal Account, CMAQ	
Downeaster Corridor Service Development Plan	2013	\$750,000	NA	\$750,000 PRIIA	
Brunswick Layover	2014	\$400,000	\$12 M	\$1M PRIIA \$8M CMAQ \$3M BOND	
Portland to Boston capacity and transit time enhancements	2012-2015	\$500,000	\$22M	ARRA, MBTA	
Greater Portland Commuter Rail	2015 (planning) 2022 (development)			FTA	
Portland to Lewiston-Auburn intercity and commuter rail	2015 (planning) 2020 (development)			FRA/FTA	
Brunswick to Bath and Rockland	2015 (planning) 2018-2020 (development)				
Mountain Division upgrades	2020 (planning)	\$100,000	\$30 M	State Bond funds FRA/FTA	
Portland to Montréal High-speed intercity passenger rail	2020 - 2030	\$500,000	Unknown	Federal HSIPR Canadian HSR States and Provinces	
Greater Bangor regional rail service/intercity	2018 (planning) 2025 (development)				

Continuation of CMAQ funding to provide for operating cost of the service is a high priority for Maine. The CMAQ funding and \$1.5 million from the State of Maine accounted for \$7.5 million of the Downeaster's annual operating budget in 2008. The remaining \$6+ million came from ticket sales (fare revenue). The existing exemption permitting the use of CMAQ funds has been extended several times and continued through 2014 in MAP- 21.

A HSIPR grant was submitted to improve the Downeaster corridor between Portland and Atkinson, New

Hampshire to increase travel speeds and line capacity and enable a travel time reduction for the service. This grant application was not selected for funding, so alternative sources for these capital improvements will need to be identified.

Other intercity and commuter rail projects have been proposed. They include: Portland to Lewiston/Auburn; Brunswick to Bath/Rockland; restoration of the Mountain Division, which connects Portland to Fryeburg, and restoration of service to Montréal.

Funding for passenger rail transportation projects is categorized as either capital or operational. The former includes the construction, rehabilitation, and improvement of the transportation infrastructure. The latter refers to the funds that are required to operate and maintain the transportation service.

Passenger rail revenue typically comes from four sources: 1) directly generated revenues; 2) local revenues; 3) state revenues; and 4) Federal revenues. Directly generated revenue is acquired by the transportation agency through the activities of the agency itself. Fares and fees levied by the system, as well as advertising, concessions or parking revenue are examples. Local revenues are taxes or fees that are generated by a local or regional government. Examples include local sales or income taxes, property taxes, or other local fees. State revenues are taxes or fees imposed by a state government, and Federal revenues originate from Federal government funds.²⁸ Private funding may be appropriate for equipment lease-back financing.

In 2007 a passenger rail funding task force was established to consider various approaches and opportunities for financing passenger rail. A Sub-Committee on Alternative Funding researched a wide range of potential funding mechanisms. The Sub-Committee considered and dismissed the following funding sources:

- Impact Fees charged to developers to compensate for the impact of their development on roads. Maine does not impose these fees, and an in-depth study and legislation would be required to institute.
- Tax Increment Financing (TIF), which is a local economic development financing tool used at the discretion of the municipality. Limited in duration, TIF districts cannot be considered permanent funding.

The Sub-Committee also examined other funding streams including:

- Local Option Taxes
- Real Estate Transfer
- Car Rental taxes
- Meals & Lodging taxes
- Bonding
- Vehicle Inspections and Registrations
- Parking Fees
- Air Quality Credits
- Vehicle Excise and Sales Tax
- Petroleum Fees
- Tolling
- Fees on Tire Sales
- Specialty License Plates

Of these options, further research was conducted on air quality credits, car rentals, general sales, meals and

²⁸ http://www.apta.com/resources/reportsandpublications/Documents/case_business_investment_pt.pdf

lodging, real estate transfer, vehicle excise, and vehicle sales taxes. Information was gathered on the Multimodal account, and research was conducted on public transportation funding utilized by other states.

As a result of the Sub-Committee's efforts, the Task Force on Passenger Rail recommended that transportation-linked tax revenues be allocated to support passenger rail at the following levels:

- Car Rentals (100 percent);
- General Merchandise Sales (2 percent);
- Meals & Lodging (2 percent);
- Vehicle Sales (1 percent).

The intent of the recommendation was to provide a revenue base for ongoing state financial support for the operations of the Downeaster and to replace the CMAQ funds which have been used for nearly ten years by means of a federal waiver. This recommendation would make CMAQ funds available for other transportation projects throughout the state. The Task Force also recommended that these funds be transferred into the Multimodal account.²⁹

The Multimodal account is currently funded by railroad taxes, aviation fuel taxes, airport fees and taxes, propane fuel taxes, and others, and totaled approximately \$2 million in FY 2008. The funds may be used for purchasing, operating, maintaining, improving, repairing, constructing and managing Multimodal account fund assets, which include buildings, structures and improvements, and equipment. Effective July 1, 2009, a new law dedicated half of the existing tax on car rentals to the Multimodal Transportation Fund for capital improvement projects, including the Downeaster.³⁰ In 2011 the statute was changed to dedicate all these revenues to the Multimodal account.

7.4.2 Freight Rail

Funding required for freight rail infrastructure improvements is driven by three factors: demand, current system capacity, and infrastructure expansion costs. The U.S. DOT estimates that population growth, economic development, and trade will almost double the demand for rail freight transportation by 2035.³¹

The Maine Freight Strategy reported in 2009 that the maintenance of Maine's state owned rail assets is essential to meeting Maine's freight requirements. The Strategy identified funding needs for freight rail the next 10 years as presented in Table 7-8. As shown in the table, total funding need has been identified at \$50.5 million. More than \$20 million of these required funds are expected to come from private and federal sources. The State of Maine would be required to fund \$53.8 million to fully support the state's freight rail investment needs.

The Industrial Rail Access Program (IRAP) provides 50/50 matching funds to private businesses to install or upgrade sidings, switches and other rail infrastructure in order to utilize rail to move their products. The Maine Freight Strategy reports that \$7.5 million has been invested in IRAP since 1997. Annual investment needs are estimated to be \$1.5 million, based on a 10 year time horizon.³²

29 Findings and Recommendations Report, Task Force on Passenger Rail Funding, January 2007

30 <http://www.seacoastonline.com/apps/pbcs.dll/article?AID=/20080604/BIZ/806040353>

31 National Rail Freight Infrastructure Capacity and Investment Study, Prepared for Association of American Railroads, Prepared by Cambridge Systematics, Inc., September 2007.

32 Maine's Freight Strategy 2009, Prepared by: MaineDOT, Office of Freight & Business Services, 2009.

Table 7-8: Freight Rail Ongoing 10 Year Investment Needs

NEED	TOTAL	STATE	OTHER
Industrial Rail Access Program	\$15,000,000	\$7,500,000	\$7,500,000
Section 130 Rail Crossing Program	\$7,500,000		\$7,500,000 (Federal)
Capitol Rail Maintenance of State Owned Track	\$8,000,000	\$8,000,000	
Rail Property Purchases / Upgrades	\$15,000,000	\$10,000,000	\$5,000,000 (Private)
Freight Rail Interchange Program	*\$5,000,000	*\$2,500,000	*\$2,500,000
<i>*Contingent upon Searsport Development</i>			
TOTAL FREIGHT RAIL NEEDS	\$50,500,000	\$28,000,000	\$22,500,000

The Maine Freight Strategy suggests that \$500,000 should be invested annually to regularly replace and maintain rail ties on the Rockland Branch and \$8 million will be required for rail maintenance for the next 5-10 years. Currently, rail maintenance funding is \$150,000 per year for the state's 320 miles of track.

The Section 130 Rail Crossing Program is anticipated to require \$7.5 million in the next 5-10 years. Approximately \$1.3 million is made available by the FHWA for safety improvements to the state's rail/highway crossings.³³

The new Critical Rail Corridors Program is modeled after the IRAP program and is intended to encourage public-private partnerships. The State's Biennial Capital Work Plan originally anticipated \$16 million in funding for this program. The funding request was reduced significantly, and a \$2 million bond for this program was approved in the fall of 2009. It is anticipated that these funds will leverage an additional \$2 million in private funds.

The historic annual investment levels of the several state rail freight financing programs, as well as annual anticipated investment needs and other information, are presented in Table 7-9. This table does not include financing for the Montreal Maine & Atlantic (MM&A) commitment or the purchase and upgrade of several rail properties.

Table 7-9: Historic Annual Funding vs. Funding Requirements (\$Millions)
MaineDOT Freight Rail Programs

Funding Program	Historic Annual Investment Level	Funding Through Multimodal Acct.	Annual Investment Needs	Anticipated Annual Federal/State Funding	Anticipated Annual Shortfall
Industrial Rail Access Program	\$0.5	\$1	\$1.5	\$1 ³⁴	\$0.5
Section 130 Rail Crossing Program	\$1.3	\$0	\$1.3	\$1.3	\$0
Maintenance of State Owned Track	\$1	\$1	\$1	\$1	

Notes: The draft Freight Strategy provides estimates of the freight rail needs by category for the next 5-10 years. The Annual Investment Needs³⁵ estimates shown in the table assume a 10 year time horizon for these investments.

³³ Maine's Freight Strategy 2009, Prepared by: MaineDOT, Office of Freight & Business Services, 2009.

7.4.5 Potential Strategies for Improving Rail Financing

Both passenger and freight rail initiatives in Maine will require funding beyond the levels that have historically been available. The sources of funds will vary depending on the nature of the project, type of rail service being considered, and other local factors.

Privately-owned freight rail service providers generally finance improvements through current cash flow based on expectations of future demand. Because of this private ownership structure, freight rail projects have traditionally not been funded by public resources. There are restrictions in using public funds for infrastructure that is privately owned.³⁴ As a result, alternative sources of funding must be, and have been, pursued. For example, Maine's IRAP has enabled freight railroads to make enhancements and improvements to the benefit of shippers that might not otherwise be financially feasible. Federal tax credit programs based on investment in infrastructure is a means of increasing private funding of railway maintenance and improvement.

Continued funding of the state's IRAP and CRCP will permit the greatest leveraging of the state's limited finances. These programs rely on private sector participation and have the ability to promote and provide funding for projects that would not be financially feasible for private railroads or the public to fund unilaterally. To the extent possible, these programs should be fully funded and expanded. Creating a state infrastructure bank able to offer loans for rail improvements is another funding option for the state's consideration. For each of these options, public funds will be required to leverage private investment in rail.

Targeting Priorities

Recognizing the lack of clear and consistent federal and state rail funding in the short term MaineDOT should establish targeted, low cost improvements that may be implemented to address immediate challenges to the state's rail network. The state rail plan has identified many major investment projects, but has also indicated regulatory, institutional and operational issues that may be addressed within the framework of current budgetary constraints, yet will lay the groundwork for an improved system that will be able to capture growth of both passenger and freight markets. Examples of these issues are included in Table 7-10.

Longer-term, the state should continue to seek capital and operational support to enable improvement and expansion of rail service in the state. Although capital funding may be available for some of the state's highest rail priorities, securing operational funding for these expanded services will continue to be a challenge, and must be addressed before capital investments are made.

Funding through the Railroad Rehabilitation and Improvement Financing (RRIF) program is a realistic option for some of the rail projects envisioned by the state. These direct federal loan guarantees will help to finance the development of railroad infrastructure, and there is a significant level of funding available to non-Class I carrier freight railroads.

Alternative grant sources, including the Economic Development Administration and United States Department of Agriculture, should also be explored. These grants may be particularly appropriate for Maine's more rural areas. The Rail Line Relocation and Improvement Capital Grant Program may also be a suitable funding source, and both competitive and non-competitive grant funds should be pursued.

As illustrated in this chapter Maine has successful programs that provide for passenger and freight rail projects, but there remain serious funding shortfalls. One consideration for the state is to restructure the current programs

³⁴ Freight Transportation: Strategies Needed to Address Planning and Financing Limitations, prepared by the General Accounting Office (GAO), December 2003.

to provide more flexibility in the kinds of rail oriented projects that can be funded. The Commonwealth of Virginia's Rail Enhancement Fund is an example of a competitive but flexible funding mechanism for both freight and passenger rail and intermodal transportation improvements.

Finally, it should be noted that the federal government is currently considering the implementation of dedicated rail funding sources as part of the new transportation authorization bill. These efforts may provide the state with additional funds for use in rail infrastructure projects in the future. In addition, local sources of funding should be explored.

Table 7-10: Regulatory, Institutional and Operational Issues

Regulatory	Institutional	Operational
Competition from Trucking–state role in truck size and weight	Coordinate land use and transportation planning at state, regional and local levels	Encourage enhanced interchange between carriers (FRIP)
Tax equity with competing modes	Coordinate transportation planning with economic development programs	Provide safe and efficient highway connections for intermodal freight operations
Conform land use regulations to transportation network – e.g., Protect industrial sites, establish freight village concept, encourage residential density as appropriate (TOD)	Develop expanded freight data capacity within DOT – to identify modal diversion opportunities, to project future demand, to identify market trends (FHWA Freight Analysis Framework)	Improve modal connectivity for passenger rail operations and regional public transit at stations – enhanced bicycle and pedestrian access
Tax credits to overcome deferred maintenance	Establish Freight Advisory Committee – shippers and communities to identify problems, challenges and opportunities	Explore freight pricing issues with connecting carriers – establish outreach through Freight Advisory Committee – dialogue required to identify mutual benefits
Examine if there are regulatory constraints on rail car supply for Maine's shippers	Develop inventory of rail served industrial sites – joint marketing efforts with railroads and state economic development agencies	Explore development of co-operative rail car fleet to meet Maine shippers needs
Identify and correct regulatory (or statutory) constraints to passenger rail funding	Develop inventory of major trip generators/destinations that provide opportunities for passenger rail service growth to predict future travel demand and patterns	Protect rail corridors for future use for both freight and passenger services
Identify and correct any regulatory (or statutory) constraints on public-private partnerships for freight and passenger rail programs and projects.	Establish and continue effective working relationships with freight carriers, including multi-modal carriers (trucks and marine)	Continue and expand multi-state and provincial efforts to coordinate transportation planning for both passenger and freight services – develop meaningful regional study efforts
Explore potential for development of a state infrastructure bank (either independent or in conjunction with federal programs)	Focus on high priority corridors, but recognize the importance of transportation options in rural regions (light density regions)	

CHAPTER 8 | *Finding and Recommendations*

The Maine State Rail Plan - 2014-2019

MaineDOT has long taken a proactive, long-term approach to the development and maintenance of the state's multi-modal transportation network – with freight and passenger rail being key components of that network. More recently MaineDOT has embraced the corridor planning approach as outlined in its twenty year, multi-modal transportation plan entitled *Connecting Maine: Planning Our Transportation Future*. Focusing state transportation investments in key regional trade corridors that connect economic hubs both in and outside of Maine is an essential element of this approach.

In the preparation of this state rail plan the analysis of the state's rail system considered statewide, regional and international rail issues that may not necessarily be addressed by individual rail line owners or operators. This factor reinforces the need for a centralized approach to rail planning – an approach that takes a holistic view of the rail system as an element of the state's entire transportation network. This state rail plan provides a multi-decade blueprint to focus federal, state and local investments, both public and private, in a rail system that supports the vision, goals, objectives and policies recommended in this plan. These recommendations identify projects that support and enhance freight and passenger mobility in key corridors of state and regional significance. These projects address barriers to the safe, reliable and cost-effective mobility of Maine's citizens and visitors, and of the products needed to maintain and improve the quality of life for all Maine residents.

The purposes of this Maine State Rail Plan are:

- To set forth Maine's policies concerning freight and passenger rail transportation.
- To designate the Commissioner of Transportation as the State Rail Authority.
- To present priorities and strategies to enhance passenger and freight rail services that benefit the citizens of Maine.
- To meet the requirements of PRIAA and to provide guidance for federal and state rail investments.

Nationally, state rail plans are intended to contribute to and support the evolving National Rail Plan being prepared by the U.S. DOT. Consistent with the U.S. DOT's Strategic Plan the goals of this national rail plan are to maximize the public's investment in an integrated, multimodal performance-based system. The Department's strategic goals include:

- Safety
- State of Good Repair
- Economic Competitiveness
- Livable Communities
- Environmental Sustainability

These goals are consistent with the overarching goals for the Maine State Rail Plan.

State Government Responsibility for Rail Infrastructure Investment

The capacity and reliability of the railroad system is directly related to infrastructure investments – just like the highway system. Transportation capacity and reliability can contribute significantly to economic opportunities to both urban and rural regions. The range of benefits attributable to rail system investments include:

- **Economic Impacts:** Attract new businesses; avoid business relocations; avoid or delay new highway

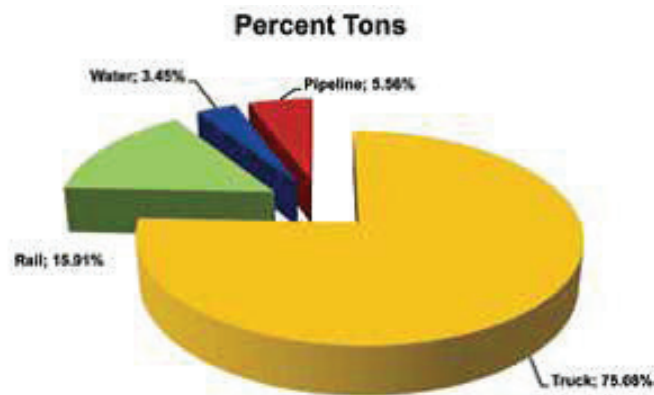
expansion; create direct and indirect jobs; retain and expand existing businesses; expand local, regional, and national economy; increase tax revenue; reduce highway maintenance costs; reduce shipper logistics costs; and retain existing jobs.

- **Environmental and Quality of Life:** Air quality improvements; noise reductions; reductions in fossil fuel use; urban and regional redevelopment; improved mobility options.
- **Safety and Security:** Reduction of hazardous materials shipment risks; increased security by providing transportation system redundancy; and reductions of VMT on public highways and roadways.
- **Regional and National Significance:** Expand national and regional economy; enhance interstate commerce; improve nationwide reliability by eliminating local bottlenecks; and expand nationwide transportation capacity.
- **Transportation:** Eliminate bottlenecks; reduce the numbers of heavy trucks on the public roads; improve competitiveness; improve carrier efficiencies; improve reliability; increase capacity; reduce highway delays; reduce passenger and freight rail delays; and maintain modern standards.

In its progress report on the development of the National Rail Plan¹ the Federal Railroad administration reported that by 2035 the freight industry will see an increase of some 2.8 Billion tons of freight, to meet the needs of our ever growing population. This increased demand must be accommodated without a significant expansion of the national highway system, thus creating an opportunity for the railroad freight industry to expand its market share. Figure 8-1 illustrates today's mode split for freight tonnage in the United States.

The report also notes that when various transport modes are compared, considering all the economic, social and environmental costs rail emerges as "...one of the safest and most fuel efficient transportation modes..." for both goods movement and personal mobility.

Figure 8-1: Freight Transportation Mode Share

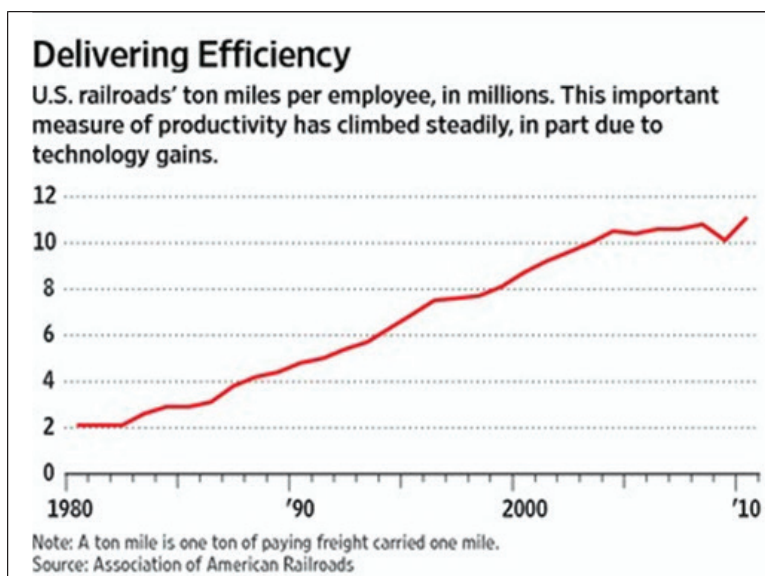


Source: Commodity Flow Survey

Nationally the Staggers Rail Act of 1980 that deregulated the freight rail industry led to significant productivity gains and improved the overall efficiency in the freight rail network. Figure 8-2 illustrates this national trend. However, for Maine and similar regions the railroads' efforts to make operations more efficient included disposition of non-profitable, light density lines to regional and short-line railroads. The efficiency gains resulted in reduced costs that the railroads passed on to shippers, which increased business on the higher density routes, but often resulted in trans-loading for customers located off of the main stem of the network. This in turn resulted in less traffic on the branches which reduced revenue leading to service and maintenance reductions.

¹ United States Department of Transportation, National Rail Plan – Progress Report, September, 2010

Figure 8-2: U.S. Railroads Improved Efficiency



Compared with other major industries, today's freight railroads invest one of the highest percentages of revenues to maintain and add capacity to their system. The majority of this investment is for maintenance to ensure the state of good repair, and approximately 15-20 percent of capital expenditures, on average, used to enhance capacity. The capacity enhancements made during the recent economic downturn have positioned the railroads to meet the short-term, but not long-term capacity concerns. Key investments will be needed to meet future growth in freight demand.²

So, given this generally positive outlook for the freight rail industry, what role does Maine have in meeting the challenges of meeting demand for increased freight tonnage both within and outside its borders? A problem statement from the National Highway Cooperative Research Program describes the challenges:

*"There are a number of issues that must be considered in evaluating the need for and the means of increasing public investment in rail freight capacity. The one on which this task is to be focused is how to demonstrate what the public obtains in terms of benefits from its investment in rail capacity improvement(s). Even with a strong case that the railroad industry will need strategic public investments in order to perform the economic role required of it, Federal and state decision-makers will still require a clear means of demonstrating how these investments will generate the public benefits for which they were intended."*³

Layered over these issues of freight is the clear and present interest in making use of the railroad network in the state to enhance personal mobility – and the challenges associated with shared use corridors. Maine does have a successful model for this concept with the Downeaster corridor, but this partnership requires an economically healthy freight operation.

This chapter presents key findings and recommendations for actions (the plan) to ensure that the rail system remains a vital component of Maine's multi-modal transportation network. It is important to recognize that economic and transportation issues change over time. This study report presents a snapshot of Maine's rail system using the best available information at this time and most importantly will be maintained as a working document with frequent data inputs to help MaineDOT address future needs and challenges.

² AASHTO, Freight Bottom Line Report

³ "Research Problem Statement," National Cooperative Highway Research Program, NCHRP 8-36, Task 43, FY 2003.

8.1 Key Findings

The purpose of this chapter is to discuss the consultant teams findings and recommendations based on public input as well as analysis of available data and inventory of completed studies. The development of the Maine State Rail Plan (MSRP) included detailed analysis and assessment of the current railroad system, including identifying both current and historical levels of freight business and passenger ridership, outreach to the general public and stakeholders and a review of pertinent public planning and policy reports related to surface transportation in the state and region. Information and data were collected and analyzed and the findings reflect the best understandings of the planning team (both the state agency personnel and the consultant team). Others may suggest different findings, topics, issues or conclusions, and it is for that reason that MaineDOT considers this MSRP to be a working document, to be responsive to changing conditions and opportunities.

The findings presented reflect the consultant team's review of published studies and reports, evaluation of primary data from the study, and input from both the public at large, and transportation stakeholders as represented by the members of the Technical Advisory Committee.

8.1.1 Passenger Rail Findings

Passenger rail enjoys strong public, private sector and political support in Maine, even in low population regions of the state. This support is strongly influenced by the successful implementation of the Downeaster service in 2001, and its continuing growth in ridership. Based on the MSRP team's analysis of reports and plans, public input from the four public meetings, and input from members of the Technical Advisory committee following are the key findings related to passenger rail services.

1. Enhanced service (frequency, travel time) would encourage increased use of the Downeaster service.
2. The multi-state nature of Downeaster operations requires continued cooperation among the states and host railroads (see Figure 8–3)
3. Extensions of Downeaster service north of Portland are viewed as positively essential to achieving increased utilization of rail, and reducing dependence on the automobile for both residents and visitors.
4. Passenger rail service encourages economic development in communities with direct service. The Brunswick extension is a prime example of how the rail service encouraged and supported private development at the station sites in Freeport and Brunswick.
5. The overall long term economic impact of the Downeaster service exceeds the public investment in both capital and operating costs.⁴
6. Freight rail corridors provide the most likely opportunities for passenger rail service extensions, but there must be mutual benefits.
7. Some freight carriers (owners) see value in shared use operations since public investments for passenger operations enhance track conditions and contribute to maintenance costs.
8. Passenger rail is often confused with other transit services, such as light rail. The distinction between commuter rail and intercity rail services is also often misunderstood.
9. Population density and projected traffic volumes currently do not meet traditional FTA criteria for benefit/costs to support federal funding for capital investments in commuter rail services in the region. Although a

⁴ Center for Neighborhood Technology, Amtrak Downeaster: Overview of Projected Economic Impacts, March, 2008. From the projected state and local tax revenues alone, public investments in Downeaster and Rockland Branch service will be repaid with a significant return on investment by the Year 2030. These economic benefits will be distributed among the town centers of the communities served by passenger rail, where they will provide optimal support for existing local business and public services and have minimal negative impact on the natural environment.

formal benefit/cost analysis was not conducted as part of the MSRP studies, a parallel project did evaluate the I-295 corridor using the FTA criteria and recommended enhanced bus services instead of commuter rail.

Public Perceptions and Expectations of Passenger Rail Include:

1. Amtrak Downeaster (Intercity Rail) is viewed as a vital service with considerable support for the extension north of Portland to Brunswick and potentially in the future Lewiston/Auburn with long term possibility for passenger service to Augusta and Bangor if it can be justified.
2. Intercity rail to Lewiston/Auburn is viewed as an incremental step to potential passenger rail to Montréal.
3. Future commuter rail for the Greater Portland region is viewed as positively important to meet the strong public desire for transit options, especially in I-295 corridor; but also in the western corridors.
4. Lewiston/Auburn region has expressed interest in development of transit options – for both intra-regional and to Portland and beyond. Freight rights-of-way are viewed as appropriate for this use.
5. Public support for rail service has land use implications with some advocates suggesting the need to constrain sprawl development patterns that are emerging as southern Maine experiences continuing, although slowing, population growth.
6. Passenger Rail is viewed as important in linking Maine to both Canada and the continental United States.

State of Maine financial support for passenger rail has been subject to the availability of federal CMAQ funds and state matching funds to meet operational and maintenance costs beyond fare revenue.

Passenger rail service has demonstrated its value and enjoys broad public support, but lacks steady, reliable and predictable federal, state and local funding for ongoing operational support.

The current Downeaster rail station configuration in Portland presents operational challenges for service.

Passenger excursion operations contribute to policy goals of protecting and preserving railroad assets, promoting tourism and regional economic development, and utilization of state owned railroad rights-of-way.

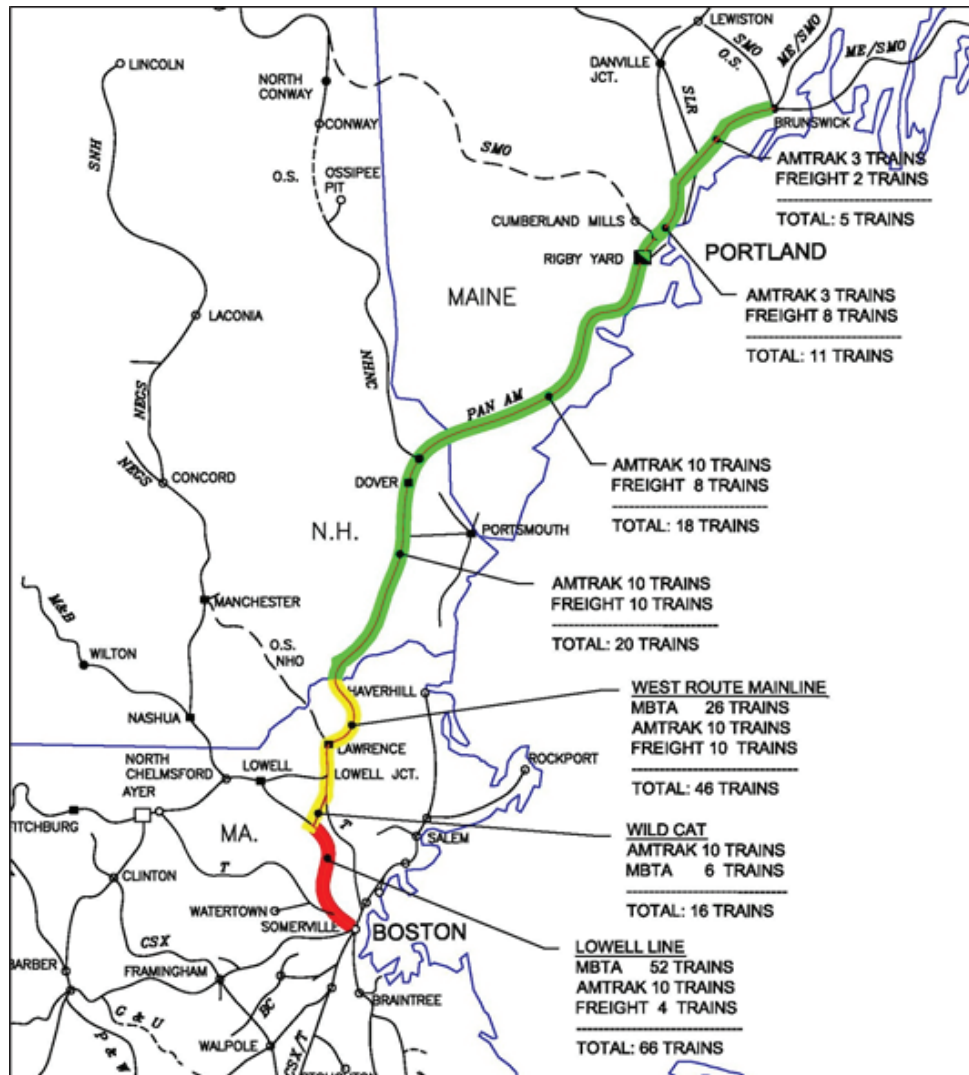
Interstate Cooperation

As illustrated in Figure 8-3 the Downeaster route traverses three states and operates over two host railroads. Improving transit time and increasing frequency require strategic investments in the railroad track structure to increase speed and expand capacity to accommodate all operations on the route – including freight, commuter and intercity services. The figure illustrates current levels of train operations (as of December, 2010), and suggests locations where increased capacity and related track improvements would provide benefits for all operations on the line.

Massachusetts, through the MBTA, has provided track and station access and maintenance at reasonable costs.

Maine, through NNEPRA, and Massachusetts have collaborated on seeking federal funds under ARRA to fund improvements on the Downeaster corridor. This federal economic stimulus program has resulted in double tracking of segments of the MBTA route in Massachusetts that will enhance transit time for commuter rail and intercity rail services as well as accommodating current and anticipated future freight needs.

Figure 8-3: Downeaster Route Train Density and Capacity Constraints



Source: HNTB with train operations data from MBTA, Pan Am and NNEPRA

8.1.2 Passenger Rail Recommendations

Given the strong public support for passenger rail services throughout the state, and the effective planning and coordination of both NNEPRA and the MaineDOT, the following recommendations have been identified for inclusion in the Maine State Rail Plan.

Intercity Passenger Rail

1. Finalize FRA compliant Corridor Service Development Plan.
2. Continue incremental investments in Downeaster corridor to increase operating speed, increase safety, increase frequency and reduce transit time between Portland and Boston.
3. Add additional round trip to Brunswick.
4. Develop and implement passenger equipment procurement plan.
5. Construct adequate maintenance and storage facilities for equipment in Brunswick.

6. Develop transportation hubs (intermodal centers) to provide connectivity between intercity (and/or commuter rail) and local transit services for linkage to communities employment, commercial and residential nodes.
7. Evaluate operating scenarios for extension to Lewiston/Auburn.
8. Evaluate alternative Portland passenger station configurations.
9. Identify and protect potential high-speed passenger rail routes (west to Montréal, and south to Boston (NEC)).
10. Maintain and expand upon multi-state and provincial regional coordination efforts.

Commuter Rail is defined as a mode of transporting people from outlying suburban regions into a highly congested core, central city. Typically commuter rail services utilize multi-car train sets travelling along existing rail lines, and have limited stops en-route. Evolving services include reverse commutes that bring city dwellers out to suburban employment centers.

Following are steps recommended to evaluate and develop commuter rail services in Maine.

1. Identify and protect/acquire inactive rail corridors with potential for future commuter rail/transit uses, especially north, west and south of Portland, as well as in the Lewiston/Auburn region.
2. Assess regional transit alternatives analysis for the Greater Portland region to include regional ridership analysis in conjunction with MPO's, building on recent transit studies in I-295 and Gorham East-West corridors.
3. Evaluate alternative intermodal station locations in Greater Portland (coordinate with intercity passenger rail).
4. Initiate regional ridership analysis where justified.

Institutional and Public Policy Considerations

1. Designate the MaineDOT as State Rail Authority to prepare the state rail plan and the Commissioner of the DOT as the Rail Plan Approval Authority in compliance with § 22702 of PRIIA.
2. Establish framework and responsibility for multistate intercity and high-speed passenger rail planning and development (continue coordination efforts with multi-state coalitions).
3. Work with the Administration and Legislature to establish predictable, reliable funding sources to address the need for ongoing operating costs, capital needs, and future asset acquisition.
4. Continue and expand on successful track/corridor sharing for joint use with private railroad owners.
5. Evaluate institutional alternatives for commuter rail operations (state, regional, multi-state).
6. Coordinate commuter rail planning with local/regional transit systems and MPO/RPO's.
7. Develop interagency cooperative framework to better link transportation investment and land use and development planning to encourage transit oriented development.

8.1.3 Freight Rail Findings

The freight rail system in Maine has undergone a period of adjustment as a result of deregulation, economic cycles, changes in logistics management and requirements, and significant changes in the Maine based natural resource and paper industries.

1. The freight railroad network in Maine is generally seen as adequate to serve the current level of rail traffic – but is inadequate to grow new business. There are exceptions to this assessment, with some segments in good condition, and others in poor condition.
2. Rail customers report that a significant portion of the rail network operates under conditions that negatively impact transit time, resulting in service that does not meet shippers requirements for timely and predictable delivery of their products (either inbound or outbound).
3. Some rail customers report that multi-carrier routing in and out of Maine negatively impacts costs and transit time, resulting in diversion of traffic to motor carriers.
4. Railroads report declining amounts of freight tendered and increasing diversion of traditional rail traffic to motor carriers, resulting in declining revenue to support operations.
5. Significant segments of the rail lines in Maine are not able to handle the emerging interline standard rail car of 286,000 lbs.
6. The two rail routes that are double stack capable do not directly link Maine to the continental U.S. rail system, but rather connect to Canadian provinces.
7. Although compliant with established FRA track classifications, many segments of the railroad network have old, outdated rail and ties, and bridges and other structures that are in need of investment to bring the rail lines to a state of good repair (SOGR) that would enable improved transit time and a normalized, more cost-effective maintenance program. Many parts of the network suffer from deferred maintenance practices that result from lack of resources.
8. The highway-railroad grade crossing improvement program (Section 130) is an effective tool to enhance safety at crossings.

Business-Traffic Conditions

1. “Just in time” and other similar logistics practices result in Maine shippers placing a high value on selecting the transportation mode that can deliver goods in the shortest time period possible, thereby minimizing warehousing and inventory carrying costs. This factor has had a negative impact on utilization of the rail network in Maine.
2. Trucking dominates freight haulage in the northeast U.S. region. Maine’s robust highway capacity and lack of any serious congestion allows trucking to overcome the natural price advantage of rail by providing a higher level of service that is both cost-competitive and predictable.
3. The primary customer base for the railroad network in the state is directly related to the forest products and pulp and paper industries. Paper related commodities account for approximately 71 percent of terminating rail freight. This dominance has had a negative impact on business conditions for the railroads as these industries’ markets and materials sourcing have undergone significant changes, especially during the recent national economic downturn.
4. The emerging energy market (wood pellets, bio-fuels, and wind turbine equipment) currently does not have sufficient volume or regularity of traffic to offset reductions in more traditional rail business lines. However, recent developments in domestic fuel shipments of crude oil, propane and gas have provided new

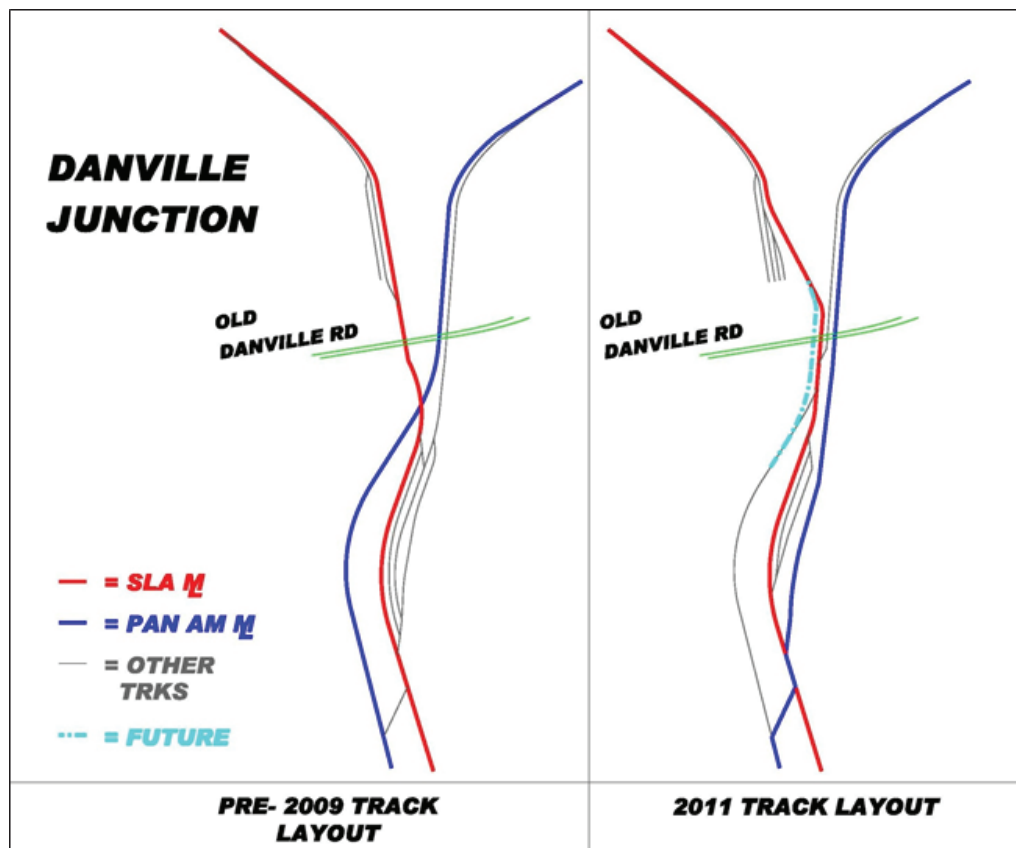
opportunities for railroads in Maine and the region.

5. Intermodal market opportunities have been limited due to pricing constraints that favor the use of terminals outside of Maine.
6. Maine's Three Port Strategy has potential to provide business opportunities for rail.

Public Policy Issues

1. MaineDOT's rail freight programs (IRAP, FRIP) have been successfully used to enhance services, to encourage public private partnerships, and to retain or grow rail freight market share in some markets. Figure 8-4 illustrates the Danville Junction project.
2. The lack of predictable, adequate and flexible federal, state and local public funding to support freight rail improvement projects hampers state action to protect and preserve rail freight infrastructure and operations.
3. MaineDOT has initiated programs to more effectively collect and analyze freight data that will help to develop more fact based decision making related to freight projects, including development of the Maine Freight Plan and establishment of a Freight Advisory Committee.
4. The lack of a multilateral approach to development of rail freight strategies with and by the state's economic development and statewide planning agencies was identified by stakeholders as impacting a coordinated funding and program delivery system.
5. MaineDOT has effectively developed a multi-modal approach to its corridor planning; yet funding constraints limit development of rail projects.

Figure 8-4: Danville Junction FRIP Project



The rehabilitation of Danville Junction was a public/private partnership involving two railroads and MaineDOT. The Rehab project makes this rail interchange yard more efficient reducing travel times of shipments interchanged at the junction by approximately 36 hours and reduces train congestion, locomotive idle time and improves safety for the railroads and the general public. The ML symbol in the graphic above indicates Main Line track of each railroad.

8.1.4 Freight Rail Recommendations

Freight rail service is an essential component of Maine's transportation and economic development system. The scope and scale of issues impacting the statewide rail freight system, the increasing interest in dedicating public funds into both freight and passenger rail improvements, and the interest in passenger rail service across the State have reinforced the need to expand and enhance on-going rail system planning in Maine. The State Rail Plan provides the context for this coordinated effort.

Infrastructure Investment

1. Implement a strategy for investment in railroad infrastructure to improve the rail network to a state of good repair to enable rail to be a viable and sustainable transportation mode for more Maine-based shippers/consignees. The priority for public funds should be for state owned infrastructure, and in private infrastructure that provides essential services within the targeted trade corridors within and to and from the state through public-private partnerships.
2. Develop and implement a strategy to encourage private sector investment in railroad infrastructure to bring critical rail corridors to a state of good repair ("SOGR").
3. Consider trade corridors in multi-modal freight planning efforts. As an active member of both the Eastern Border Transportation Coalition (EBTC) and the I-95 Corridor Coalition, MaineDOT has identified freight mobility as critical to the state's transportation network and economic health.
4. Critical Rail Corridors were identified for the State Rail Plan based on current and projected demand for goods movement and personal mobility.⁵ State investment should target high traffic density rail lines to protect and preserve current services, and enable growth of both freight and passenger operations. The following Critical Rail Corridors were identified:
 - a. PAR– state line to Bangor/Mattawamkeag
 - b. MMA – Searsport to Bangor-Brownville Jct. (and west to Québec, Canada c. EMR/NBSR – Brownville Jct. to New Brunswick, Canada
 - c. SLA – Auburn to NH line (and on to Québec, Canada)
 - d. SLA/SMO - Portland to Danville Junction f. MMA – Brownville to Millinocket
 - e. MWR/SMO – Millinocket to Madawaska h. EMR route - Madawaska to Van Buren
 - f. SMO – Mountain Division
 - g. Boston – Portland – Brunswick passenger corridor k. Portland north to Lewiston/Auburn
5. Develop an implementation plan in coordination with the railroads to accommodate heavier rail cars (286,000 pound) and double stack clearances in corridors as may be appropriate to market conditions. This plan should address the timing and funding of improvement projects to provide for connections to southern New England and the continental United States.
 - a. Any state funded assistance to expand 286,000 pound and double stack capacity should focus on Critical Rail Corridors and be linked to out of state corridors with those capabilities.

⁵ Criteria for identification of critical rail corridors are identified in Chapter 1, section 1.6.1, with an emphasis on economic impacts.

- b. State funded freight investment programs should provide for potential future shared use freight routes for passenger rail services.
- 6. Continue and expand programs to improve, separate and consolidate highway-rail grade crossings. Develop a strategy to close unnecessary, unsafe highway/railroad at-grade crossings. Make full use of the federal “section 130” program.
- 7. Direct state investments in rail infrastructure toward intermodal hubs such as the intermodal facilities at Auburn, Mack Point at the Port of Searsport, Estes Head terminal at the Port of Eastport, the Preque Isle Commerce Center, the Auburn area distribution center, and the Port of Portland. These transportation nodes have the potential to generate freight traffic into the freight rail system. These efforts should also be integrated with highway funding of NHS intermodal connectors.

Services and Operations – Parts of Maine’s freight rail network has endured significant declines of business in the past two decades as well as reduced levels of service and maintenance, and less reliable service and diversion of business to motor carriers. Following are recommendations for actions that may be taken by the MaineDOT and other state agencies to reverse this cycle of decline.

- 8. Develop and utilize state and federal data resources to identify and evaluate rail market opportunities and to identify potential for modal diversion from highway to rail.
- 9. Explore and develop potential freight rail role in new energy markets, including bio-fuels, wind power, domestic crude oil and propane, and other emerging technologies.
- 10. Implement cooperative efforts with railroads, shippers and regional planning agencies to identify underused rail served facilities and sites that may be developed to grow rail market opportunities.
- 11. Explore the concept of “freight villages” with communities and regions to encourage community friendly freight centers to take advantage of multimodal services. The Freight Village accommodates rail reload/transload facilities, to enable railroads and warehouse operators to pool regional freight from customers not served directly by rail. This will require the cooperation of land use and zoning agencies working in concert with MaineDOT, railroads and others engaged in freight logistics services.
- 12. Explore appropriate role of the state in addressing rail car equipment needs of Maine shippers.
- 13. Continue pro-active state role to advocate for better service and pricing for Maine shippers/consignees.

Policy and Institutional Issues

- 14. Work with the Administration and Legislature to establish predictable, reliable funding sources to address the need for ongoing program and project operating costs and future acquisitions of railroad rights-of-way and other facilities.
- 15. Explore innovative funding sources, including public-private partnerships, multi-state initiatives, and tax increment financing. Continue partnerships for EPA funded opportunities to acquire low emission diesel locomotives and APU’s⁶ and similar environmental enhancement programs.
- 16. Continue IRAP and FRIP programs to encourage public private partnerships for investment in rail facilities.
- 17. Establish shipper and carrier advisory committees to enable more effective communications with these key stakeholders.
- 18. Encourage multi-carrier projects that enhance inter-carrier moves – to improve services, reduce transit time and increase system reliability.

⁶ Auxiliary Power Units that are used to maintain heat and power in railroad locomotives to prevent freezing and restarting problems. The US EPA has provided grants to railroads to reduce fuel consumption and pollution.

19. Establish interagency coordination with state economic development and planning agencies to provide for a unified, statewide approach to goods movement planning and analysis. This effort should take into account all freight modes.
20. Collaborate with the Maine Port Authority to identify and evaluate potential state investments in multi-modal freight projects related to enhancing connectivity between ports and rail services.
21. Preserve rail corridors for current and/or future transportation needs. State acquisition of a rail corridor is justified when state ownership is the most efficient and cost-effective means of preserving the rail corridor.
22. Develop a technical assistance program for and with transportation planning and economic development organizations to improve freight planning with the assistance of the FHWA resources, research institutions (University of Southern Maine) and other federal resources to enhance freight planning capabilities statewide.
 - a. Continue ongoing assessment of future freight data needs to support future freight planning and policy needs.
 - b. Provide guidance for conducting freight studies, research and development of regional freight plans.

These recommendations evolved out of the state rail planning process, with input from MaineDOT staff, stakeholders from the Technical Advisory Committee, public agency staff from throughout the state, and from the extraordinary participation of the general public who contributed serious and meaningful ideas and suggestions.

The following section is the Draft Maine State Rail Plan for 2014-2019.

8.2 *Maine State Rail Plan, 2014 - 2019*

PURPOSE

The purpose of the Maine State Rail Plan is to guide future decisions related to public policies and investments in the railway network that serves the State of Maine. The Plan is a working document that is subject to change based on changing markets and demographics. A project that today appears to be a long range objective may, within a few years, rise to the top of the priority list based on needs and funding opportunities that are unforeseen today.

The State Rail Plan establishes a framework for an ongoing dialogue among state agencies, railroads, shippers, communities and the citizenry. The Plan Report (chapters 1-8) provides a base of understanding of the existing conditions and challenges of the railroad system, and that system's relationship to the state, regional and national multi-modal network of both freight and passenger operations and services.

These proposed policies, programs and projects have been identified through analysis of information, dialogue with and outreach to stakeholders and the general public. These proposals make sense today – are feasible and may be expected to provide a return on investment to the State and its constituents. Return on investment does not always mean an absolute dollar return to the state, but rather means that the state's overall transportation system will function safely, effectively and provide improved mobility for both people and goods within the State. Further, strategic investments in the railroad system, when coordinated with economic development and land use planning, may also enhance the overall quality of life for Maine's citizens and visitors.

The underlying basis for the Plan are the goals and objectives identified early in the rail plan development process – an iterative process that considered public input, current programs, policies and resources and needs as identified by rail system stakeholders.

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Section I Goals & Objectives

Section II Policies

Section III Programs

Section IV Projects

Passenger Rail

Freight Rail

Planning

Section I - Goals & Objectives

The Goals and Objectives as described in Chapter 1 of the State Rail Plan report are modified here based on the development of the plan, inputs received from MaineDOT, stakeholders and the public, and the reality of current conditions. Working goals and objectives are summarized as follows:

Goals	Objectives
1. Safety (refers to safety of the general public, railroad passengers and employees, and overall safety and security of the rail system as an element of the state's transportation network.)	<ul style="list-style-type: none"> • Enhanced rail passenger safety • Reduced trespass and enhanced security for railroad rights-of-way • Upgrade, consolidate, eliminate at-grade highway-railroad crossings
2. Mobility for goods and people (refers to the need for mobility options that are effective in providing alternatives to reliance on the highway system.)	<ul style="list-style-type: none"> • Provide for a railroad network that is fully integrated with the North American rail system, for both passengers and goods movement • Reduced the costs of transportation to enhance economic competitiveness of the state's industries • Reduced costs of transportation associated with congestion, pollution • Availability of adequate and dependable rail services
3. Preserve and strengthen current rail network (refers to public actions required to protect further contraction of the railroad system in the state.)	<ul style="list-style-type: none"> • Rail corridors protected from abandonment and dissolution • Enhanced utilization of the rail network • Achieve a state of good repair appropriate to market demand • Utilize public-private partnerships to promote system preservation

4. Enhance system efficiency (refers to collective public-private efforts to enhance railroad system reliability.)	<ul style="list-style-type: none"> • Improved on time performance and system capacity • Improved system reliability related to interchange among freight carriers • Improved passenger system utilization • Improved system multi-modal connectivity
5. Maintain the network for future transportation, economic development and environmental sustainability (refers to public policies at the state and local level that encourage railroad system utilization.)	<ul style="list-style-type: none"> • Policies and programs implemented to encourage increased rail network utilization through modal diversion • Rail system infrastructure investments implemented to enhance operations and increase rail market share of both goods and passengers • Land use planning and regulation coordinated with transportation system planning
6. Establish stable and predictable sources of funding for rail system investment	<ul style="list-style-type: none"> • State funding in place for railroad system capital investment and operations consistent with public policies and programs • MaineDOT positioned to take advantage of federal rail funding programs • Strategic investment plan based on market needs has sustainable funding

Section II - Policies

Governmental policies have wide ranging impacts on the transportation system, including the railroad network. State transportation policies have traditionally focused on investment in the public highway system and public transit systems, and regulations related to public safety and environmental protection. The focus on building and maintaining the highway system has provided significant mobility benefits for moving both people and goods. However, this policy focus has had the unintended consequence of diverting people and goods away from rail and transit alternatives to motor carriers and automobiles, with concomitant impacts on roadway congestion and air quality.

MaineDOT has adopted and implemented a number of significant policy initiatives to bring a more balanced approach to the transportation system. Specific railroad related policies in place for the past several decades include:

- Railroad Corridor Preservation
- Public-private partnerships as implemented by the IRAP and FRIP programs
- Capital investments in infrastructure to protect and enhance railroad operations (both passenger and freight)
- Capital investments in multi-modal facilities to encourage modal connectivity
- Operating assistance for passenger rail services

MaineDOT has also engaged in active strategic planning efforts to identify short term and long range needs to meet mobility needs now and in the future. The Can Am study, Eastern Border Coalition studies and I-95 Corridor regional rail studies have all informed this state rail plan through identification of issues and opportunities to enhance the economic competitiveness of the State within the region and nation through targeted investment in transportation trade corridors.

The following policy initiatives have been identified to achieve the goals of this state rail plan:

1. Designate the MaineDOT as State Rail Authority to prepare the state rail plan and the Commissioner of the DOT as the Rail Plan Approval Authority in compliance with § 22702 of PRIIA.
2. Work with the Federal Government, Administration and Legislature to establish predictable, reliable funding sources to address the need for ongoing program and project capital and operating costs and future acquisitions of railroad rights-of-way and other facilities.
3. Establish framework and responsibility for multistate intercity and high-speed passenger rail planning, development and funding.
4. Continue IRAP and FRIP programs to encourage public private partnerships for economically sound investment in rail facilities.
5. Establish shipper and carrier advisory committees to enable more effective communications with these key stakeholders.
6. Encourage multi-carrier projects that enhance inter-carrier moves – to improve services, reduce transit time and increase system reliability.
7. Continue and expand on successful track/corridor sharing for joint use with private railroad owners.
8. Coordinate rail planning with local/regional transit systems and MPO/RPO's.
9. Establish interagency coordination with state economic development and planning agencies to provide for a unified, statewide approach to goods movement planning and analysis.
10. Develop interagency cooperative framework to better link transportation investment and land use and development planning to encourage transit oriented development.
11. Collaborate with the Maine Port Authority to identify and evaluate potential state investments in multi-modal freight projects related to enhancing connectivity between ports and rail services.
12. Continue to preserve rail corridors for current and/or future transportation needs.

Section III - Programs

MaineDOT has successfully implemented several key programs to address rail system needs. These programs include:

- Capital maintenance of state owned rail lines
- Industrial Rail Access Program
- Freight Rail Improvement Program
- Section 130 grade crossing program
- Rail Corridor Protection Program
- LRFA loan program

MaineDOT has also adopted a corridor approach to transportation planning and has defined a new program – the Critical Rail Corridors Program.

The Maine State Rail Plan program recommendations include continuation and strengthening the current programs, implementation of the Critical Rail Corridors Program, and the following programmatic approaches to achieving state rail plan goals:

1. Develop a technical assistance program for and with transportation planning and economic development organizations to improve freight planning with the assistance of the FHWA resources, research institutions

(e.g., University of Southern Maine) and other federal resources to enhance freight planning capabilities statewide.

- a. Maintain an ongoing assessment of freight data needs to support future freight planning and policy needs.
 - b. Develop land use planning and transportation planning linkages to enable development of transit oriented development and freight village and similar development concepts to encourage utilization of the railroad network.
 - c. Develop an inventory of rail served sites and facilities, and encourage local and regional land use policies to protect such sites for future industrial and rail uses.
2. Develop a shipper/carrier exchange program to identify impediments to and solutions to increase use of rail freight option. Engage state development agencies in this process.
 3. Implement a corridor planning program to include multi-modal connections and land use planning.
 4. Engage actively in regional transportation planning and cooperation with surrounding states and provinces.

Section IV - Projects

Passenger Rail

Many passenger rail projects were identified in the course of the state rail plan process. The following table provides a listing of projects that are consistent with the state's goals, the policies and programs of the rail plan and the fiscal realities facing the state and the nation.

Timing	Project Title	Location	Description	Est. Cost ⁷	Local Share	Fed Share	Rationale
short- term ⁸	Dowheaster Corridor Improvements	Boston to Portland and Brunswick	Capital investments to increase capacity, frequency and speed	\$ 40 to 60 M	20%	80%	Reduced travel time and increased frequency will increase ridership
short- term	Dowheaster equipment procurement	Corridor	Additional train sets needed to increase service frequency	\$10 M per train set Need 2 train sets	20%	80%	Amtrak will retain ownership of train sets
short- term	Portland station evaluation	Portland	Identify changes for Portland station that will help the service grow long term and operate efficiently	\$10 – 20 M	20%	80%	Current location and configuration constrains service
short- term	Brunswick equipment layover	Brunswick	Develop equipment layover and maintenance facility for intercity passenger rail services	\$12 M		80%	Expanded service on this will require increased equipment servicing capability

⁷ This study will be incorporated in the Corridor Service Development Plan to be prepared by NNEPRA.

⁸ This project listing adds a new time frame category that refers to projects and programs that require ongoing state financial support through the biennium budget process and/or transportation bond acts.

Timing	Project Title	Location	Description	Est. Cost ⁷	Local Share	Fed Share	Rationale
short-term	Portland wye	Portland	Reestablish Portland wye track from station to PanAm mainline	\$10 M	20%	80%	Cut travel time to Brunswick by 8-10 minutes
short-term	Preservation of rail corridors	Greater Portland, Lewiston- Auburn, Greater Bangor	Protect integrity of rail corridors for future transit needs	\$5 M	100%		
Long-term	Commuter rail analysis	Greater Portland	Building on recent studies, conduct an assessment of ridership demand, land use policies and alternatives analysis	\$2- 3 M	50%	50%	Recent studies have identified long range potential demand for commuter rail, but short term needs do not meet benefit - cost test. Public support suggests further consideration.
Long-term	Portland to Montréal service	State and region	An examination of alternatives related to intercity passenger rail service – including tourist operations, standard intercity and high speed rail options.	\$5 M	50%	50%	Public support and national policy suggests need for further analysis.

Freight Rail

In the course of the rail plan study many issues and needs had been identified concerning both the state owned rail lines and those remaining in the private sector. This table lists projects that are consistent with state rail plan goals and MaineDOT policies. The fiscal challenges facing the state require that projects undertaken leverage external funds, including private sector and other levels of government when appropriate. The very effective IRAP program engages all beneficiaries in a project and provides for equitable cost sharing. Federal funding is appropriate for projects of national and regional significance, including international and national commerce development and safety.

Timing	Project Title	Location	Total Capital Cost (In Millions)	Rationale	Estimated Completion Date
short-term	part of Portland rail connection	Portland	\$12 M	Direct rail connection to Portland International Marine Terminal in support of Eimskip container operations.	2014-2015
on-going	Maintenance capital of state owned rail lines	statewide	\$ 1 M annually	State acquisition of rail corridors imposes responsibility to maintain the lines in the interest of public safety.	on-going

Timing	Project Title	Location	Total Capital Cost (In Millions)	Rationale	Estimated Completion Date
on-going	IRAP, FRIP	statewide	\$1.5 M per bien-nium	These programs leverage private sector funding for key rail freight projects with immediate return in benefits	on-going
on-going	Multimodal funding for Rail Corridor Preservation Program	statewide	\$ 1 M per year	Having consistent funding in place reduces need for special legislation and bond referendum to meet emergency needs to protect threatened rail routes.	on-going
on-going	Section 130 Grade Crossing Improvement programs	statewide	\$1.2 M per year	Elimination or upgrades to highway rail at-grade crossing is effective in improving overall transportation system safety	on-going
mid- term	Relocate/ Expand SLA freight switching yard	Auburn	\$8 M	Public/Private partnership. Move/expand SLA switching operations out of congested area in Auburn to improve efficiencies in traffic moving to and from the west to Maine businesses and to Auburn intermodal facility	2018
mid-term	Bridge removal	Portland	\$ 2 M	Subject to development of both freight and passenger service needs, continue to extend rail restoration	2015-2016

Timing	Project Title	Location	Total Capital Cost (In Millions)	Rationale	Estimated Completion Date
mid-term	Mountain Division rehabilitation	Continue rehabilitation	\$ 30 M	Subject to development of both freight and passenger service needs and viability continue to extend rail restoration	2018->
On-going	Land Use – Transportation planning coordination	statewide	in house	Initiate interagency coordination efforts to link land use and transportation planning to encourage rail market opportunities (e.g., freight village concept).	ongoing
Planning	Eastport rail link	Woodland Eastport – Perry	< \$ 250 K - \$50 M+	Evaluate connections to area of the port, from reload facility in Woodland to potential rail build out to the port.	2018
Planning	Double stack clearances	TBD	Not known	Subject to needs analysis, initiate on-going program to develop key corridors to accommodate double stack rail car clearances	2018 >
Planning	286 K rail car capacity	TBD	Not known	Subject to need analysis, initiate on-going program to develop key corridors to accommodate heavier rail cars, subject to shipper requirements	2018 >

Planning Projects

Among the projects listed in the preceding tables are planning projects that are restated in the following table. These planning projects will enable MaineDOT to clarify needs and identify capital costs for passenger and freight investment strategies.

Project	Timing	Title Priority (Passenger)	Description	Total Study Cost (In Millions)	Estimated Completion Date
short- term	Downeaster Corridor Service Development Plan	High	The SDP is a requirement for eligibility for future federal funding under the HSIPR programs.	< 1	2014
short term	Develop plans for new track to serve Eimskip terminal at Port of Portland	High	Provide design to enable construction of new track to service new rail terminal at Port of Portland	< 1	2013
mid- term	Identification of corridors to be preserved for future transit needs	High	This study supports the Rail Corridor Preservation program	< 1	2016
long-term	Commuter rail analysis	Low	Public calls for commuter rail service to Portland, as well as for the Lewiston/ Auburn region require further analysis as findings to date have supported development of these services on a cost to benefit analysis. Detailed alternative analysis and environmental studies are essential to secure federal capital funding.	\$ 2-4	2018
Long term	Portland – Montréal intercity passenger rail analysis	Medium	Public expectations for either high speed or excursion/tourist rail service will require considerable analysis for this approximately 300 mile corridor. This effort will require the cooperation of the Province of Québec as well as both the US and Canadian federal governments.	TBD	2020 +
short- term	Evaluation of need for 286 K rail car capacity	statewide	Inconsistent information provided for state rail plan study needs clarification to determine market demand and rail line conditions	< \$ 250 K	2016
short- term	Evaluation of needs for double stack clearances	Statewide	Data evaluated in state rail plan study was inconclusive about market demand for double stack container services within Maine, or for connections south of Maine.	< \$250 K	2016
mid-term	Eastport rail link market analysis	Washington county	Capital costs for the project are high – need to determine “ROI” based on market development opportunities	< \$250 K	2018

**Appendix A: Maine State Rail Plan
Technical Advisory Committee Directory**

Technical Advisory Committee members.

MaineDOT

Rob Elder
Director, Office of Freight and Business Services
MaineDOT, Office of Freight Transportation
16 State House Station
Augusta, Maine 04333
robert.elder@maine.gov
Ph. 207-624-3560
Fax 207-624-3099

Nathan Moulton
Director, Rail Program
MaineDOT, Office of Freight Transportation
16 State House Station
Augusta, Maine 04333
Ph. (207) 624-3563
Fax (207) 624-3099

MaineDOT Railroad Operations and Safety Contacts

Duane Brunell, PE
Safety Performance Analysis Manager
Safety Office
Maine Department of Transportation
16 State House Station
Augusta, ME 04333-0016
Phone: 207-624-3278
Fax: 207-624-3251 Cell: 207-557-1298

Other State Agencies

Maine Dept. of Agriculture, Conservation and Forestry, MacGregor Stocco, macgregor.stocco@maine.gov, Phil Carey, phil.carey@maine.gov). 1-800-662-4545 or (207) 287-6077

Maine Department of Economic and Community Development, Brian Doyle, Business Development Specialist, MITC/DECD, brian.doyle@maine.gov, 207-822-0186, 207-557-0706

Maine Department of Environmental Protection, Lynne Cayting, Lynne.A.Cayting@maine.gov

Maine Legislature

Legislative Transportation Committee, Ed Mazurek, Transportation Committee, RepEd.Mazurek@legislature.maine.gov

Regional Planning Organizations

Greater Portland Council of Governments (GPCOG), Neal Allen, Executive Director, nallen@gpcog.org, Neal Allen – 207.774.9891

Androscoggin Valley Council of Governments (AVCOG), Jennifer Williams, Transportation Director, 207-783-9186, jwilliams@avcog.org

Bangor Area Comprehensive Transportation System (BACTS) - Executive Director (Rob Kenerson)

Southern Maine Planning and Development Commission - Tom Reinauer, Transportation Director, treinauer@smrpc.org

Economic Development Organizations

Eastern Maine Development Corporation, 207-942-6849

Lewiston-Auburn Economic Growth Council, Lucien Gosselin, Executive Director, laegc@economicgrowth.org (plus LA Railroad)

Northern Maine Development Commission, 207.493.5764

Maine International Trade Center, Janine Bisailon-Cary, President and State Director, jbcary@mitc.com, 207.541.7400

Rail Operators

Montreal, Maine & Atlantic Railway, Robert C. Grindrod, Pres. & CEO, 15 Iron Road, Hermon Maine 04401 207-848-4253 rcgrindrod@mmarail.com

Maine Eastern Railroad, Gordon Fuller, CEO, 49 Abbett Ave. PO Box 2405, Morristown, NJ 07962-2405, gfuller@merail.com (Gordon Page also a representative)

St. Lawrence & Atlantic Railroad, Ed Foley, VP, 123 Rodman Road, Auburn, ME 04211 207.753.4224 – efoley@gwrr.com

Pan Am Railways, Sydney Culliford, Executive Vice President, 978-663-9320 sculliford@panamrailways.com

New Brunswick Southern. Ian Simpson, General Manager, P.O. Box 3189, St. John, NB E2M 4X8, 506.632.5813 simpson.ian@nbsouthern.com

New Hampshire North Coast Corporation, P.O. Box 429, Ossipee, New Hampshire 03864. (603) 539-2789 (were not part of the TAC, but are included for reference)

Passenger Rail

Amtrak - Paul Eastwood, eastwop@amtrack.com

NNEPRA - Patricia Quinn, Executive Director, NNEPRA,
75 West Commercial Street, Suite 104, Portland, Maine 04101, patricia@nnepra.com

Port

Maine Port Authority, John Henshaw, 207-624-3564, John.h.henshaw@maine.gov

Advocacy Groups

Trainriders Northeast , Wayne Davis, president, wedavis@trainridersne.org, 207-879-7245

Sierra Club, Paul Weiss, weissp@hotmail.com, Sandy Amborn, alternate, sandyamborn@yahoo.com

Maine Rail Group, Jack Sutton, jtsutton@prexar.com

Other:

Maine Better Transportation Association, Maria Fuentes, maria@mbtaonline.org

Maine Motor Transport Association, Brian Parke, bparke@mmta.com

New England Association of Rail Shippers, Joe Gearin, Executive Director, joe.gearin@comcast.net.